Vol. 995 Number 3

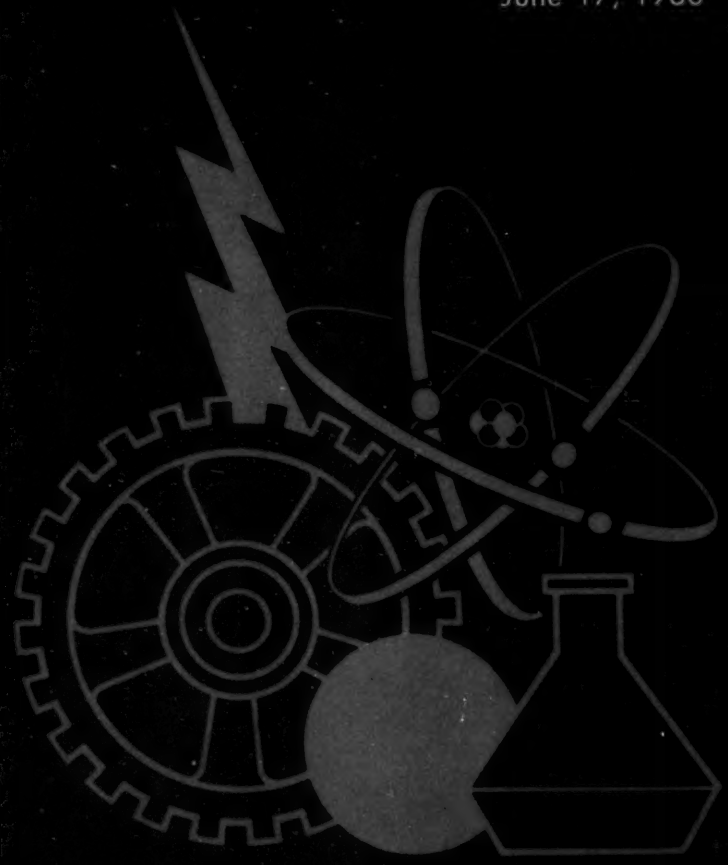
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

June 17, 1980



U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

June 17, 1980 Volume 995 Number 3

CONTENTS

	Page
Patent and Trademark Notices	
Patent Cooperation Treaty (PCT) Information	995 OG 18
Reissue Applications Filed	995 OG 18
Patent Notices	
Certificates of Correction for the Week of June 17, 1980	995 OG 20
Disclaimers	995 OG 20
Disclaimer and Dedication	995 OG 21
Dedications	995 OG 21
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	995 OG 22
Condition of Patent Applications	995 OG 23
Reissue Patents Granted (30,305)	781
Plant Patents Granted (4,546)	783
Patents Granted	
General and Mechanical (4,207,627)	785
Chemical (4,208,182)	975
Electrical (4,208,542)	1077
Design Patents Granted (255,392)	1147
Index of Patentees	PI 1
Indices of Applicants of Reissues, Plants and Designs	PI 40
Classification of	
Patents (Including Reissues)	PI 43
Designs and Plants	PI 45
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 46
Designs and Plants	PI 47
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $300.00 per annum for first-class mailing, also available as fourth-class mail at $200.00; foreign first-class mailing rates will be furnished upon request; single copies each, $4.00 domestic, $5.00 foreign.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $88.40 per annum, foreign mailing $22.10 additional; single copies $1.70 each.

GENERAL INFORMATION concerning TRADEMARKS, price $1.50 each.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS AND DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of February 12, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Jan. 28, 1980.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,339,546, Re. S.N. 129,002, Filed Mar. 10, 1980, Cl. 128/156, BANDAGE FOR ADHERING TO MOIST SURFACES, James Ling Chen, Owner of Record: *E. R. Squibb & Sons, Inc., New York, N.Y.,* Attorney or Agent: Lawrence S. Levinson, et al., Ex. Gp.: 335

3,614,891, Re. S.N. 137,526, Filed Apr. 4, 1980, Cl. 73/151, WELL SURVEYING INSTRUMENT AND METHOD, Ernst P. Nolte, Owner of Record: *Prakla Gesellschaft fur Praktische Lagerstatten-Forschung GmbH, Hanover, Germany,* Attorney or Agent: D. C. Roylance, et al., Ex. Gp.: 244

3,639,334, Re. S.N. 136,377, Filed Apr. 1, 1980, Cl. 260/45.9 R, STABILIZATION OF POLYPHENYLENE ETHERS, Klaus E. Holoch, Owner of Record: *General Electric Company, New York, N.Y.,* Attorney or Agent: William F. Mufatti, et al., Ex. Gp.: 143

3,741,772, Re. S.N. 129,340, Filed Mar. 11, 1980, Cl. 426/55, PROCESS FOR PRODUCING DE-BONED MEAT PRODUCTS, Archie Rae McFarland, Owner of Record: *Beehive Machinery Inc., Salt Lake City, Utah,* Attorney or Agent: Philip A. Mallinckrodt, et al., Ex. Gp.: 172

3,811,832, Re. S.N. 140,119, Filed Apr. 14, 1980, Cl. 8/94.25, TANNING IMPROVEMENTS, Philip S. Briggs, Owner of Record: *National Research Development Corporation, London, England,* Attorney or Agent: Arthur S. Garrett, et al., Ex. Gp.: 144

3,829,933, Re. S.N. 096,534, Filed Nov. 21, 1979, Cl. 17/53, METHOD AND APPARATUS FOR EVISCERATING SCALLOPS, William R. Lambert, Owner of Record: *Inventor,* Attorney or Agent: David Rabin, Ex. Gp.: 324

3,838,620, Re. S.N. 136,111, Filed Mar. 31, 1980, Cl. 83/819, AIR STRAIN MECHANISM FOR BANDMILL, Robert A. Baldrey, et al., Owner of Record: *Letson and Burpee Ltd., Vancouver, British Columbia, Canada,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 323

3,905,599, Re. S.N. 139,373, Filed Apr. 21, 1980, Cl. 272/81, VARIABLE RESISTANCE EXERCISING DEVICE, Martin S. Mazman, Owner of Record: *Inventor,* Attorney or Agent: Stephen S. Townsend, et al., Ex. Gp.: 334

3,906,118, Re. S.N. 129,395, Filed Mar. 11, 1980, Cl. 426/479, PROCESS FOR DE-BONING MEAT OR FISH, Archie Rae McFarland, Owner of Record: *Beehive Machinery Inc., Salt Lake City, Utah,* Attorney or Agent: Philip A. Mallinckrodt, et al., Ex. Gp.: 172

3,922,829, Re. S.N. 069,774, Filed Aug. 27, 1979, Cl. 52/667, LOCKING CONNECTION FOR SUPPORTING GRID SYSTEMS, Gale E. Sauer, Owner of Record: *Roblin Industries, Inc., Buffalo, N.Y.,* Attorney or Agent: Conrad Christel, et al., Ex. Gp.: 354

3,925,216, Re. S.N. 123,748, Filed Feb. 22, 1980, Cl. 252/49.3, LUBRICATING COMPOSITION FOR CONDUITS AND RACEWAYS, Thomas R. Moorhouse, Owner of Record: *American Polywater Corporation, Anoka, Minn.,* Attorney or Agent: Robert C. Baker, Ex. Gp.: 116

3,928,537, Re. S.N. 136,531, Filed Apr. 2, 1980, Cl. 423/243, METHOD OF REMOVING SULFUR DIOXIDE FROM COMBUSTION EXHAUST GAS, Shigeru Saitoh, et al., Owner of Record: *Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Davidson C. Miller, et al., Ex. Gp.: 113

3,957,182, Re. S.N. 138,277, Filed Apr. 9, 1980, Cl. 223/35, PLEAT FORMING DEVICE, Joseph P. Sambus, Owner of Record: *Inventor,* Attorney or Agent: None, Ex. Gp.: 353

3,985,558, Re. S.N. 134,607, Filed Mar. 27, 1980, Cl. 75/169, DENTAL ALLOY AND AMALGAM, Harold H. Simpson, Owner of Record: *Sybron Corporation, Rochester, N.Y.,* Attorney or Agent: Owen D. Marjama, Ex. Gp.: 111

4,008,738, Re. S.N. 134,142, Filed Apr. 7, 1980, Cl. 141/5, LIQUID DISPENSING NOZZLE ASSEMBLY AND METHOD OF USING SAME, Peter P. Moskovich, Owner of Record: *Atlantic Richfield Company, Los Angeles, Calif.,* Attorney or Agent: George B. Newitt, et al., Ex. Gp.: 243

4,077,675, Re. S.N. 127,261, Filed Mar. 4, 1980, Cl. 303/95, ANTILOCKING CONTROL SYSTEM, Heinz Leiber, et al., Owner of Record: *Teldix GmbH, Heidelberg, Germany,* Attorney or Agent: George H. Spencer, et al., Ex. Gp.: 315

4,084,988, Re. S.N. 139,450, Filed Apr. 11, 1980, Cl. 148/9.5, METHOD AND APPARATUS FOR MAKING INSTANTANEOUS SCARFING CUTS, Stephen A. Engel, et al., Owner of Record: *Union Carbide Corporation, New York, N.Y.,* Attorney or Agent: Harrie M. Humphreys, et al., Ex. Gp.: 111

4,085,416, Re. S.N. 139,780, Filed Apr. 14, 1980, Cl. 354/219, APERTURE INTERLOCKING DEVICE FOR A SINGLE LENS REFLEX CAMERA OF THE INTERCHANGEABLE VIEWFINDER TYPE, Sunao Ishizaka, Owner of Record: *Nippon Kogaku K.K., Tokyo, Japan,* Attorney or Agent: Joseph M. Fitzpatrick, et al., Ex. Gp.: 211

4,115,960, Re. S.N. 121,330, Filed Feb. 14, 1980, Cl. 51/422, METHOD AND APPARATUS FOR DEFLASHING, Robert F. Zecher, Owner of Record: *Advanced Plastics Machinery Corp., Ivyland, Pa.,* Attorney or Agent: Charles H. Lindrooth, Ex. Gp.: 322

4,137,976, Re. S.N. 129,051, Filed Mar. 10, 1980, Cl. 177/1, METHOD AND APPARATUS FOR BALE WEIGHT CONTROL, Allen M. Grayson, Jr., Owner of Record: *Fiber Industries, Inc., New York, N.Y.,* Attorney or Agent: Thomas J. Morgan, et al., Ex. Gp.: 211

4,141,572, Re. S.N. 140,258, Filed Apr. 14, 1980, Cl. 280/707, VEHICLE LEVELING STRUT, Ronald L. Sorensen, Owner of Record: *Monroe Auto Equipment Company, Monroe, Mich.,* Attorney or Agent: Cyrus G. Minkler, et al., Ex. Gp.: 316

4,152,235, Re. S.N. 129,641, Filed Mar. 12, 1980, Cl. 204/195 M, ION SELECTIVE ELECTRODE, John Vincent Dobson, Owner of Record: *National Research Development Corporation, London, England,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 114

4,170,937, Re. S.N. 138,611, Filed Apr. 9, 1980, Cl. 101/99, MINIATURIZED PRINTER CONTROL ASSEMBLY, Norio Nakagaki, et al., Owner of Record: *Shinshu Seiki Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Alex Friedman, et al., Ex. Gp.: 337

PATENT NOTICES

Certificates of Correction for the Week of June 17, 1980

D. 252,102	4,174,215	4,183,345	4,190,137
D. 254,278	4,174,224	4,183,405	4,190,272
D. 254,528	4,174,226	4,183,422	4,190,305
3,808,822	4,174,310	4,183,454	4,190,363
3,975,455	4,174,456	4,183,892	4,190,741
4,021,541	4,174,807	4,184,000	4,190,793
4,027,135	4,174,870	4,184,003	4,190,807
4,039,238	4,174,989	4,184,268	4,190,863
4,050,149	4,175,287	4,184,419	4,190,934
4,058,680	4,175,659	4,184,695	4,191,134
4,091,333	4,175,702	4,185,010	4,191,177
4,109,924	4,175,885	4,185,057	4,191,237
4,110,116	4,175,939	4,185,126	4,191,249
4,115,972	4,176,517	4,186,082	4,191,259
4,136,095	4,177,309	4,186,117	4,191,276
4,136,435	4,177,335	4,186,256	4,191,341
4,136,572	4,178,201	4,186,932	4,191,557
4,139,066	4,178,325	4,187,102	4,192,288
4,139,108	4,178,501	4,187,192	4,192,348
4,139,488	4,178,678	4,187,607	4,192,395
4,140,434	4,178,877	4,187,657	4,192,412
4,140,568	4,179,167	4,187,797	4,192,554
4,144,790	4,179,183	4,187,910	4,192,907
4,145,743	4,179,189	4,187,929	4,192,930
4,146,059	4,179,330	4,187,966	4,193,005
4,150,659	4,179,823	4,188,141	4,193,098
4,158,763	4,180,170	4,188,164	4,193,154
4,160,837	4,180,180	4,188,200	4,193,466
4,161,033	4,180,338	4,188,219	4,193,727
4,161,542	4,180,516	4,188,274	4,193,851
4,164,455	4,180,519	4,188,405	4,193,954
4,165,314	4,180,607	4,188,563	4,194,025
4,166,064	4,180,652	4,188,567	4,194,063
4,169,068	4,180,711	4,188,583	4,194,110
4,169,144	4,180,863	4,188,641	4,194,181
4,169,488	4,181,389	4,188,879	4,194,496
4,169,832	4,181,450	4,189,237	4,194,578
4,170,919	4,181,674	4,189,323	4,195,961
4,170,920	4,181,888	4,189,444	4,196,268
4,172,803	4,182,486	4,189,525	4,196,366
4,173,215	4,182,870	4,189,781	4,197,029
4,173,527	4,182,880	4,189,798	
4,173,657	4,182,903	4,189,917	

Disclaimers

D. 238,267.—*Charles Strada,* Chicago, Ill. MOTORCYCLE EXHAUST PIPE. Patent dated Dec. 30, 1975. Disclaimer filed Mar. 4, 1980, by the inventor.

Hereby enters this disclaimer to the sole claim of said patent.

3,328,751.—*Frank Massa,* Cohasset, Mass. ELECTROACOUSTIC TRANSDUCER. Patent dated June 27, 1967. Disclaimer filed Apr. 10, 1980, by the *Stonelegh Trust of Cohasset, Mass.,* represented by Donald P. Massa and Fred M. Dellorfano, Jr. (Co-Trustees).

Hereby enters this disclaimer to claims 10, 15, 16, 17, 18, 19, 22, 23 and 24 of said patent.

3,424,189.—*Joseph C. Woodford,* Spring Lake, Mich. SELF-DRAINING SILL COCK AND VACUUM BREAKER. Patent dated Jan. 28, 1969. Disclaimer filed Apr. 16, 1980, by the assignee, *Woodford Manufacturing Company.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,542,179.—*Evan S. Prichard,* Newport Beach, Calif. SAFETY GUARD FOR HINGED CHUTES. Patent dated Nov. 24, 1970. Disclaimer filed June 5, 1978, by the assignee, *Challenge-Cook Bros., Incorporated.*

Hereby enters this disclaimer to all claims of said patent.

3,833,809.—*Ralph G. Bell,* Houston, Tex. NEUTRON LOGGING OF FORMATION POROSITY AND CHLORINITY. Patent dated Sept. 3, 1974. Disclaimer filed May 2, 1980, by the assignee, *Schlumberger Technology Corporation.*

Hereby enters this disclaimer to claims 1–28, inclusive, of said patent.

3,917,396.—*James M. Donohue,* Rochester and *Daniel L. Mueller,* Fairport, N.Y. CONTROL SYSTEM. Patent dated Nov. 4, 1975. Disclaimer filed Apr. 21, 1980, by the assignee, *Xerox Corporation.*

The term of this patent subsequent to Mar. 12, 1991, has been disclaimed.

4,003,712.—*Adam R. Miller,* Indianapolis, Ind. FLUIDIZED BED REACTOR. Patent dated Jan. 18, 1977. Disclaimer filed Apr. 24, 1980, by the assignee, *Union Carbide Corporation.*

Hereby enters this disclaimer to all claims of said patent.

4,028,890.—*Cyril W. Habiger* and *Donald L. Hopkins,* Joliet, Ill. PISTON PUMP ASSEMBLY UTILIZING LOAD PRESSURE CONTROL. Patent dated June 14, 1977. Disclaimer filed Apr. 21, 1980, by the assignee, *Caterpillar Tractor Co.*

Hereby enters this disclaimer to all claims of said patent.

4,029,528.—*Wojciech Rosnowski,* Summit, N.J. METHOD OF SELECTIVELY DOPING A SEMICONDUCTOR BODY. Patent dated June 14, 1977. Disclaimer filed Apr. 28, 1980, by the assignee, *RCA Corporation.*

Hereby enters this disclaimer to claim 1 of said patent.

4,073,269.—*Harro Herth,* Schwieberdingen, *Bernd Kraus,* Stuttgart, *Wilfried Sautter,* Ditzingen, and *Wolf Wessel,* Schwieberdingen, Germany. FUEL INJECTION SYSTEM. Patent dated Feb. 14, 1978. Disclaimer filed Apr. 25, 1980, by the assignee, *Robert Bosch GmbH.*

Hereby enters this disclaimer to claims 1–3 and 6 of said patent.

4,082,122.—*Dean C. McGahey,* Fishkill, N.Y. CLOSED FUEL SYSTEM WITH VACUUM ASSIST. Patent dated Apr. 4, 1978. Disclaimer filed Feb. 15, 1980, by the assignee, *Texaco Inc.*

Hereby enters this disclaimer to claim 8 of said patent.

4,167,133.——*Andrew B. Adams, Jr.,* Shepardstown, W. Va. STRINGED MUSICAL INSTRUMENT NECK ADJUSTABLE TO COUNTERACT WARPING. Patent dated Sept. 11, 1979. Disclaimer filed Apr. 8, 1980, by the inventor.

Hereby enters this disclaimer to claims 1 through 6 of said patent.

Dedications

3,772,303.—*Ernst Spietschka*, Oberauroff; *Joseph Landler*, Hofheim, Taunus, Germany and *Dieter Wager*, East Greenwich, R.I. CIS-NAPHTHOYLENE-BIS-BENZIMIDAZOLE PIGMENT AND PROCESS FOR ITS MANUFACTURE. Patent dated Nov. 13, 1973. Dedication filed Feb. 19, 1980, by the assignee, *Hoechst Aktiengesellschaft*.

Hereby dedicates said patent to the Public.

3,870,426.—*John Howard Kietzman*, Golden and *Mario Peter Tocci*, Englewood, Calif. METHOD OF PROTECTING PAVEMENT FROM CORROSIVE SALTS AND AN IMPERMEABLE PAVEMENT MEMBRANE AND PAVEMENT OVERLAY FOR USE IN SAID METHOD. Patent dated Mar. 11, 1975. Dedication filed April 28, 1980, by the assignee, *Johns-Manville Corporation*.

Hereby dedicates to the Public the entire remaining term of said patent.

4,143,729.—*Burke A. West* and *Michael R. Bethell*, Monroe, Mich. SNOW VEHICLE SUSPENSION SYSTEM. Patent dated Mar. 13, 1979. Dedication filed Apr. 21, 1980, by the assignee, *Monroe Auto Equipment Company*.

Hereby dedicates to the Public the remaining term of said patent.

Disclaimer and Dedication

3,965,938.—*Richard D. Bauerle* and *William A. Pitt*, San Jose, and *Mervyn A. White*, Campbell, Calif. PIPE RESTRAINT DEVICE. Patent dated June 29, 1976. Disclaimer and Dedication filed Apr. 28, 1980, by the assignee, *General Electric Company*.

Hereby disclaims and dedicates to the Public the entire term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 17, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-18-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-18-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-3-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	1-25-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-1-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-11-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	1-31-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-1-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-2-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-3-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	4-25-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-2-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	4-2-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	4-23-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	1-16-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	2-21-79

Expiration of patents: The patents within the range of numbers indicated below expire during May 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,088,114 to 3,091,767, inclusive
Plant Patents ..... Numbers 2,258 to 2,261, inclusive

REISSUES

JUNE 17, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,305
DEVICE AND METHOD FOR PROGRAMMED HAIR COLORING

Lorenzo Caruso, 2187 Union St., San Francisco, Calif. 94123

Original No. 4,020,854, dated May 3, 1977, Ser. No. 579,386, May 21, 1975. Application for reissue May 18, 1978, Ser. No. 907,274

Int. Cl.[2] A45D *8/40*

U.S. Cl. 132—9 **5 Claims**

1. A process for the treatment of hair upon a person's head to produce several desired definite hair color styles in accordance with a predetermined program by applying upon the head of the person a cap having a plurality of holes therethrough;

said holes being 420 in number and having an identifying specific color adjacent to each hole in predetermined arrangement;

said specific hole colors being six in number, 20 being black, 40 being blue, 60 being orange, 80 being purple, 100 being green and 120 being red;

said program comprising an illustration of each of said desired hair color styles, each style being associated with one of said identifying hole colors;

extracting strands of hair through all of the holes having the identifying color associated with said desired hair color style;

treating said strands so extracted with suitable coloring means;

removing said cap from said head of said person whereby six different hair color styles are produced.

Re. 30,306
AIR INTAKE SILENCER

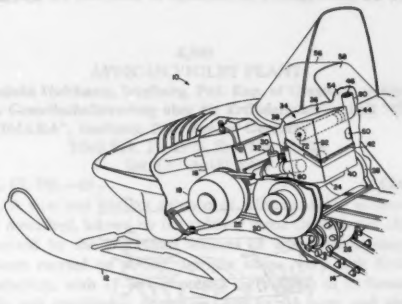
James W. Moore, and Stephen A. Braun, both of Horicon, Wis., assignors to Deere & Company, Moline, Ill.

Original No. 4,093,039, dated Jun. 6, 1978, Ser. No. 684,593, May 10, 1976. Application for reissue Mar. 15, 1979, Ser. No. 20,758

Int. Cl.[2] F01N *1/00*; F02M *35/00*

U.S. Cl. 181—229 **9 Claims**

7. An air intake silencer for an internal combustion engine, comprising: an expansion chamber of a generally rectangular box configuration including top and bottom walls joined by front, rear and opposite sidewalls; an air inlet opening provided in one of the walls at an upper location in the box; an air outlet opening provided in the front wall at a lower location in the box; and said box being made up of upper and lower sections releasably joined at a joint which, in side view, is inclined upwardly from a rear location,



at a level below that of at least a portion of the air outlet opening, to a front location at a level above that of the air outlet opening.

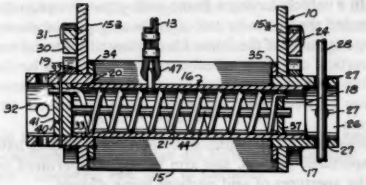
Re. 30,307
CABLE TAKE UP LOAD BINDER

Vernon E. Arbogast, 1715 E. Front St., Coeur d'Alene, Id. 83814

Original No. 4,063,712, dated Dec. 20, 1977, Ser. No. 708,315, Jun. 26, 1976. Application for reissue Feb. 8, 1979, Ser. No. 10,698

Int. Cl.[2] A63B *61/04*

U.S. Cl. 410—37 **12 Claims**



12. A cable take up load binder, comprising:

a base;

a hollow winding spool rotatably mounted to the base;

a first ratchet wheel affixed to the spool;

a first pawl operatively engaging the first ratchet wheel and pivotably mounted to the base;

a second ratchet wheel rotatably mounted to the base and rotatably journaling the remaining end of the spool;

a second pawl operatively engaging the second ratchet wheel and pivotably mounted to the base;

a torsion spring received coaxially within the spool and having one end thereof operatively connected to the spool and a remaining end operatively connected to the second ratchet wheel;

first hub means on the first ratchet wheel for receiving a turning element for applying direct torsional force to the spool; and

second hub means on the second ratchet wheel for receiving a turning element for selectively applying torsional spring force against the spool independent of the forces applied through the first hub means.

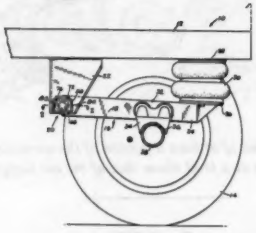
Re. 30,308
SUSPENSION STRUCTURE FOR AUTOMOTIVE VEHICLES

Lloyd D. Masser, Muskegon, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Original No. 3,482,854, dated Dec. 9, 1969, Ser. No. 715,843, Mar. 25, 1968. Application for reissue Mar. 24, 1978, Ser. No. 890,864

Int. Cl.[2] B60G *9/02, 11/28*

U.S. Cl. 280—713 23 Claims



1. In a vehicle having a frame with ground-engaging wheels suspended therefrom by two arms having pivotal connections to opposite sides of the frame for substantially coaxial swinging in a vertical direction, wheel-carrying axle means having connections with said arms, and spring means in load-transmitting relation between said frame and arms, improved structure wherein

at least one of said connections includes a member having an apertured portion, said arm having an apertured portion, the apertures of said portions being aligned,

pin means extending through said apertures and thereby securing said arm and member together,

at least one of said apertures having a cross dimension greater than that of said pin means therein so that said arm and member can be freely shifted relative to each other for aligning said axle means relative to said frame,

means effective to tighten said pin means relative to said arm and frame and thereby initially secure said axle means and frame in their relatively aligned position,

enlarged means movably disposed on and in bearing engagement with said pin means, said enlarged means engaging said member in tightened condition of said pin means,

said enlarged means having an edge portion, and means on said member positioned to engage said edge portion to maintain the predetermined alignment to said enlarged means with respect to said member,

and a welded connection between said enlarged means and member effective to fix the relative alignment of said axle means and frame.

Re. 30,309
N-ALKYL-3-PYRIDINIUM-METHANOL FLUORIDES AND DERIVATIVES THEREOF

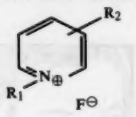
Henri Cousse; Gilbert Mouzin; Jean-Claude Vezin; Lucien D. d'Hinterland, and Jacques Dubois, all of Castres, France, assignors to Pierre Fabre S.A., France

Original No. 4,098,879, dated Jul. 4, 1978, Ser. No. 756,016, Jan. 3, 1977. Application for reissue Mar. 15, 1979, Ser. No. 20,816

Int. Cl.[2] C07D *213/30*; A61K *7/18*

U.S. Cl. 424—52 23 Claims

1. A compound of formula



in which

R_1=H or alkyl

R_2=CH_2OH, in 2 or 3 position on the pyridyl ring, "alkyl" containing a maximum of twelve carbon atoms.

10. Orally-acceptable antiplaque *and tooth enamel protective* composition containing an effective amount of *a* compound of claim 1 and a bactericidal chemical compound, having properties inhibiting the formation of dental plaque.

Re. 30,310
METHOD AND APPARATUS FOR TREATING HEAT-SENSITIVE PRODUCTS

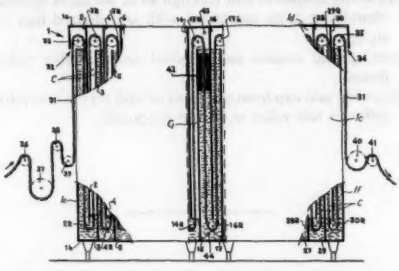
Lennart A. Stenstrom, Huddinge, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Original No. 3,809,844, dated May 7, 1974, Ser. No. 176,967, Sep. 1, 1971. Application for reissue Jul. 31, 1978, Ser. No. 930,647

Claims priority, application Sweden, Sep. 8, 1970, 12155/70

Int. Cl.[2] H05B *9/06*

U.S. Cl. 219—10.55 M 11 Claims



1. In the processing of a heat-sensitive product by heating it from substantially above 0° C. to a treatment temperature for sterilizing or pasteurizing, the method which comprises subjecting units of said product to the influence of a cooling medium and thereby placing each product unit in a condition wherein a surface layer thereof has a lower temperature than the inner portions thereof, and then subjecting each product unit to a field of electro-magnetic energy of at least microwave frequency to heat the unit from said condition to substantially said treatment temperature and while the unit is in a second medium acting to substantially equalize the heating effect of said field throughout the unit.

10. The method of claim 1 in which the units are heated prior to being subjected to the influence of the cooling medium.

PLANT PATENTS

GRANTED JUNE 17, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,546
AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Isselburg, Fed. Rep. of Germany

Filed Feb. 27, 1979, Ser. No. 15,821
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet, as shown and described, known by the cultivar name Hawaii and characterized by the combined characteristics of large, star-shaped, blue flowers which have white, wavy edges, with additional small petals occasionally occurring at the flower center; strong upright flower stems, and by its medium size leaves which have serrated edges.

4,547
AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Isselburg, Fed. Rep. of Germany

Filed Feb. 27, 1979, Ser. No. 15,822
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet, as shown and described, known by the cultivar name Alberta, and characterized by the combined features of vigorous growth habit; producing 12 or more strong flower stems each of which carries 12 or more violet-shaped flowers which are generally white with purple centers and edges, with the flowers normally containing five petals, with an occasional small petal appearing at the center attached to the receptacle; uniform bouquet and by its long blooming period.

4,548
AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Isselburg, Fed. Rep. of Germany

Filed Feb. 27, 1979, Ser. No. 15,823
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet known by the cultivar name Connecticut and characterized by the combined features of vigorous, compact growth habit; relatively large, violet colored flowers which are carried on strong erect flower stems with strong, short peduncles, and by the appearance of 7–9 flower stems with the first flash of flowers.

4,549
AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "OPTIMARA", Isselburg, Fed. Rep. of Germany

Filed Feb. 27, 1979, Ser. No. 15,824
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet, as shown and described, known by the cultivar name Ontario and characterized by the combined features of white, violet-shaped flowers carried on strong, upright stems; very rich flower production, with 15–20 stems each carrying up to 15 flowers; early and continuous flowering, and by its large and shiny leaves.

4,550
AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Isselburg, Fed. Rep. of Germany

Filed Feb. 27, 1979, Ser. No. 15,825
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet, as shown and described, known by the varietal name Manitoba and characterized by the combined characteristics of light blue, violet-shaped single flowers, having violet blue centers; dark green shiny leaves; vigorous growth habit; with 7 to 9 flower stems producing 7 or more single flowers when the plant is in full bloom, and by its early and continuous blooming.

4,551
AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Isselburg, Fed. Rep. of Germany

Filed Feb. 27, 1979, Ser. No. 15,826
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet, as shown and described, known by the cultivar name North Dakota and characterized by the combined features of up to ten flower stems, each carrying up to 10 or more single flowers generally white in color with blue-violet edgs and centers, and vigorous growth habit, with the plant being in full flower after 9–10 weeks from potting.

PATENTS

GRANTED JUN. 17, 1980

ERRATA

For CLASS	See PATENT NO.
433–060	4,207,677
433–203	4,207,678
368–029	4,207,731
368–076	4,207,732
368–108	4,207,733
368–083	4,207,734
368–300	4,207,735
102–214	4,207,841
182–172	4,207,886
371–015	4,208,008
224–185	4,208,028
029–117	4,208,147
427–296	4,208,173
431–284	4,208,180
430–140	4,208,210
430–314	4,208,211
209–211	4,208,270
548–180	4,208,328
548–239	4,208,329
556–436	4,208,342
568–324	4,208,350
568–327	4,208,351
568–431	4,208,352
568–472	4,208,353
568–003	4,208,354
585–362	4,208,355
525–089	4,208,356
204–024	4,208,366
430–124	4,208,446
426–549	4,208,476
548–247	4,208,510
528–279	4,208,527
528–487	4,208,528
528–501	4,208,529
528–501	4,208,530
536–017 R	4,208,531
370–113	4,208,550
375–007	4,208,630
455–092	4,208,631
371–047	4,208,650

PATENTS

GRANTED JUNE 17, 1980

ERRATA

PATENTS

GRANTED JUNE 17, 1980

GENERAL AND MECHANICAL

4,207,627
KNEE PROSTHESIS
Jean-Marie Cloutier, 12 Aberdeen, Westmount, Quebec, Canada (H3Y 3A4)
Filed Jan. 18, 1979, Ser. No. 4,556
Int. Cl.[2] A61F *1/24*
U.S. Cl. 3—1.911 **6 Claims**

1. A total knee prosthesis of the non-hinged type, comprising in combination:

(a) a metallic, dual condylar femoral component for implantation in the human femur, comprising a lateral condylar element and a medial condylar element integrally connected by a recessed intercondylar element and forwardly and upwardly extended by an integral, substantially trapezoidal patellar articulating element,

said lateral and medial elements being asymmetrical in the longitudinal and tranverse directions and shaped so as to have substantially the same anatomical configuration and divergence as have the human femoral condyles,

said lateral and medial elements being both convex and polycentric with radii of curvature which decrease posteriorly, said medial femoral element being slightly more convex than said lateral one in the anteroposterior direction,

said integral, substantially trapezoidal patellar articulating element including on its anterior surface, a centrally concaved groove upwardly extending the intercondylar element, for receiving and guiding a natural or prothesis patellar and stabilizing the same against lateral subluxation; and

(b) a metallic tibial component including two removable, plastics condylar bearing members, for implantation in the human tibia,

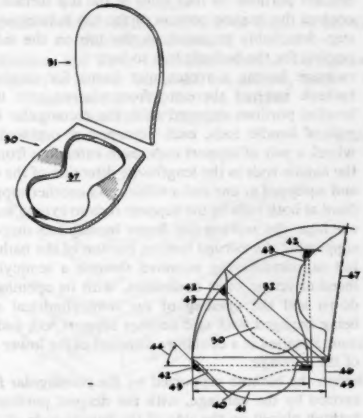
said tibial component comprising a platform member consisting of two symmetrical, spaced apart, elongated sections connected by a bridge section extending from the anterior end of one elongated section to the anterior end of the other to leave an opening in the posterior intercondylar area of the knee, each elongated section being in the shape of a metal tray with a flat bottom edged by a small vertical rim extending all about the periphery of the flat bottom, each tray receiving and retaining in position with a predetermined clearance, one of the condylar bearing member,

each condylar bearing member comprising an upper portion with a slightly concave, upper surface allowing for not only rolling and gliding but also rotational motions of the knee due to the asymmetrical shape of the condylar elements sliding thereof, and a lower portion with a flat lower surface,

said lower portion being shaped so as to be completely embedded in the corresponding tray-shaped elongated section and to lie upon the entire bottom surface of the same, to provide protection against cold flow and to improve the stability of the prosthesis,

said upper portion being shaped so as to extend over and lie upon the rim of the tray-shaped elongated section to improve load distribution.

4,207,628
COMBINATION TOILET SEAT AND BIDET BASIN
Manfred Ibel, 178 Fifth Ave., New York, N.Y. 10010
Filed Jul. 6, 1978, Ser. No. 922,492
Int. Cl.[2] A47K *3/22, 11/08*
U.S. Cl. 4—445 **11 Claims**



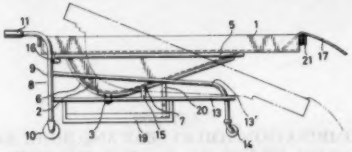
1. A toilet seat positioned on a toilet bowl, said toilet seat having enlarged inwardly extended opposite middle portions for the supportive engagement of the user's thighs over the middle portion of a toilet bowl, said toilet seat having an opening with an enlarged rear portion and a relatively narrow middle portion defined by said enlarged opposite middle portions; a bidet basin positioned over said toilet seat in lieu of a toilet seat cover, said bidet basin consisting of a bidet seat portion and a bidet bowl portion, said bidet seat portion overlying said toilet seat and said bidet bowl portion being integrally connected along its upper edge to the inner peripheral edge of said bidet seat portion and penetrating said toilet seat opening; said bidet seat portion having enlarged opposite middle portions for the supportive engagement of the user's thighs, said enlarged middle portions of said bidet seat portion overlying said enlarged middle portions of said toilet seat in complementarity; said bidet seat portion having an opening with enlarged rear and front portions and a relatively narrow middle portion, said enlarged rear portion of said bidet seat portion opening overlying said enlarged rear portion of said toilet seat opening in complementarity, said relatively narrow middle portion of said bidet seat portion opening overlying said relatively narrow middle portion of said toilet seat opening in complementarity.

4,207,629

TUB-BATHING EQUIPMENT FOR BEDRIDDEN OLD PEOPLE AND PHYSICALLY-HANDICAPPED PEOPLE

Hideo Kagawa, No. 11-17-604, Otemachi, 2-chome, Hiroshima-shi, Japan

Filed Oct. 25, 1978, Ser. No. 954,412
Claims priority, application Japan, Nov. 2, 1977, 52/131684
Int. Cl.[2] A47K *3/08*
U.S. Cl. 4—540 **1 Claim**



1. A tub-bathing equipment for bedridden old people, physically-handicapped people and so on, comprising:

a bathtub shaped, in its longitudinal section, like a shallot longitudinally cut into halves and equipped with angle bracket portions on four sides of the top surface, a drain cock at the deepest portion of the tub bottom and a foot step detachably mounted on the tub on the side of its portion for the bather's legs to lay;

a carriage having a rectangular frame for receiving the bathtub inserted thereinto from above, with its angle bracket portions engaged with the rectangular frame, a pair of handle rods, each equipped at one end with a wheel, a pair of support rods, each extending from one of the handle rods in the lengthwise direction of the carriage and equipped at one end a wheel, and another support rod fixed at both ends to the support rods to extend across the carriage, the rectangular frame having tub supports for supporting the curved bottom portion of the bathtub, the tub supports having mounted thereon a semicylindrical member across their undersides, with its opening facing down and the opening of the semicylindrical member being engaged with said another support rod; and

a crane installed in a container disposed at the lower portion of the carriage;

wherein the bathtub supported by the rectangular frame is carried by the carriage, with the deepest portion of the bathtub placed on the side of the handle rods of the carriage; and

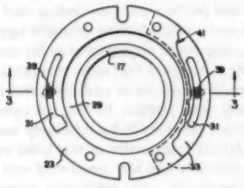
wherein the top end of the crane is detachably mounted to the tub support in the manner that it enables the bathtub to move up and down.

4,207,630

METHOD OF REPAIRING WATER CLOSET ANCHORING TO FRACTURED CLOSET FLANGE AND SPANNER CLAMP THEREFOR

Mark Bressler, 1081 Hartwig, Troy, Mich. 48098

Filed May 7, 1979, Ser. No. 36,785
Int. Cl.[2] E03D *11/00*
U.S. Cl. 4—252 R **10 Claims**



1. The method of repairing the water closet anchoring to a fractured broken away closet flange which comprises:

disconecting and disassembling the water closet from said fractured closet flange;

assembling a slotted repair spanner clamp upon the undersurface of said closet flange spanning the fractured portion thereof;

projecting a headed fastener up through said spanner clamp for anchoring said fastener to said closet flange;

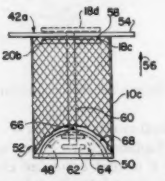
and reassembling the water closet over said closet flange with its mount flange in registry with said spanner clamp and resecuring said water closet mount flange to said fastener.

4,207,631

DRAIN STRAINER

Gary Baggey, R.R. #4, Bright, Ontario, Canada

Continuation-in-part of Ser. No. 831,782, Sep. 9, 1977, abandoned, which is a continuation of Ser. No. 676,742, Apr. 14, 1976, abandoned. This application Jul. 26, 1978, Ser. No. 928,165
Int. Cl.[2] E03C *1/26*
U.S. Cl. 4—286 **7 Claims**



1. A drain strainer comprising a waste accumulating container, said container having a plurality of holes therethrough, said container having an opening, said opening in said container defining a plane, said opening for the introduction of waste material into said container, supporting means for supporting said container within a drain opening, a handle, said container having a base portion, means to slidably secure said handle to an opening in said base portion, said means to slidably secure including means to limit the upward displacement of said handle from said base portion and means to limit the downward displacement of said handle towards said base portion, means to selectively releasably secure said base portion into and out of the interior of the remaining portions of said container, said handle at the upper end thereof defining a grasping portion extending parallel to the said plane defining said opening in said container, said base portion having an inverted cupshaped surface extending upwardly into said container, said base portion is disposed having circular marginal edges, a plurality of threads being disposed on said marginal edges, said container having a circular opening therein, said circular opening carrying a plurality of female threads, said opening in said base portion defining a width and a size thereof, said handle having at least one lateral surface thereof greater in size than the width of said opening in said base portion whereby rotating said handle causes the rotation of said base portion and the disengagement of said base portion from said remaining portions of said container.

4,207,632

DRAIN MEANS

Jesse J. Savell, Jr., 1645 Alston Ave., Colton, Calif. 92324, and Jess R. Coffey, 25632 Mead St., Loma Linda, Calif. 92354

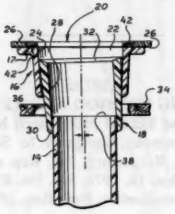
Filed Oct. 2, 1978, Ser. No. 947,764
Int. Cl.[2] E04C *1/22*; E03D *11/16*; A47K *3/08*
U.S. Cl. 4—288 **9 Claims**

1. Drain means particularly suitable for use in providing a leakproof connection between an accessible drain opening in an in-place facility having such an opening and a pre-posi-

tioned drain pipe for said facility having its upstream end spaced from said opening in approximate alignment therewith, comprising:

a first part comprising a body having a through passageway of round cross-section, defined by a frustoconical wall, said body being adapted for leakproof attachment to said facility with its passageway in communication therewith through said drain opening and said passageway converging outwardly away from said facility to a location above said drain pipe; and

a bushing-like second part having a round top, a round bottom and a side wall of round cross-section and frustoconical configuration, said bushing-like second part also having a passage from top to bottom therethrough, said passage being sized and shaped to receive said drain pipe in telescopically sliding interfit;



said bushing-like second part being of a size and shape to mate with the frustoconical wall of said passageway in such fashion that its top is inside the passageway and its bottom extends away from said first part sufficiently far to telescopically receive said drain pipe in said passage of said bushing-like second part;

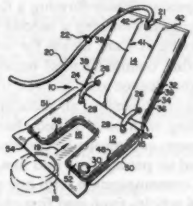
whereby leakproof connection between said facility, with said first part affixed in said leakproof attachment thereto, and said drain pipe can be quickly and easily achieved by applying a suitable sealing preparation to certain surfaces of the first part, bushing-like second part and drain pipe, then fitting the bushing-like second part into said passageway and the drain pipe into said passage, universally moving the bushing-like second part in said passageway to permit insertion of the drain pipe into said passage if necessary due to misalignment of the drain pipe and the drain opening in said facility.

4,207,633

INFLATABLE BODY SUPPORT FOR USE WITH BEDPAN

Ruby E. Smith, Renton, Wash., and Margj Imel, 1940 N. Jantzen Ave., Portland, Oreg. 97217, assignors to Margj Imel, Beaverton, Oreg.

Filed Sep. 5, 1978, Ser. No. 939,184
Int. Cl.[2] A61G 7/02; A61C 9/00
U.S. Cl. 5—90 **6 Claims**



1. An inflatable body support, comprising:

(a) inflatable hip support cushion means of flexible airtight material, having a generally U-shaped configuration which includes two leg portions and a base portion, for receiving a bedpan in a space defined between said leg portions and for supporting hips and thighs of a patient above said bedpan when said cushion is inflated;

(b) inflatable back support cushion means of flexible airtight material for lifting and supporting the upper body of the patient;

(c) uninflatable flexible connecting means for joining said back support cushion means to said hip support cushion means along said base portion, for allowing said back support cushion means to be articulated with respect to said hip cushion means; and

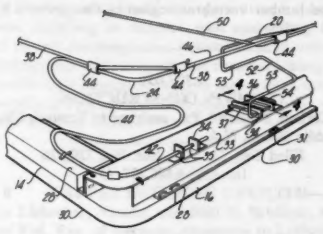
(d) flexible tube means interconnecting both of said cushion means for selectively permitting inflation of said hip support cushion means simultaneously with said back support cushion means and, alternatively, for permitting inflation of said hip support cushion means separately from said back support cushion means.

4,207,634

BOX SPRING ASSEMBLY WITH END RAIL SPRING MOUNTING UNITS

John P. Kitchen, and Terry L. Gabhart, both of Georgetown, Ky., assignors to Hoover Universal, Inc., Saline, Mich.

Filed Oct. 20, 1978, Ser. No. 952,949
Int. Cl.[2] A47C 23/04
U.S. Cl. 5—255 **3 Claims**



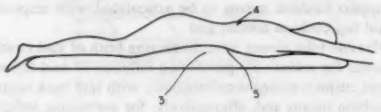
1. In a box spring assembly which includes a generally rectangular frame comprising side and end rails formed of wood and having substantially horizontal top surfaces, and a plurality of cross rails formed of metal extending between said side rails, corner wires secured to said frame and having horizontal body portions and depending mounting portions which terminate in substantially horizontal attaching portions, said horizontal body portions being connected to form a generally rectangular border wire disposed above the outer periphery of said frame, and main springs having horizontal body portions secured to said border wire and depending mounting portions which include a plurality of torsion bars and terminate in substantially horizontal attaching portions; the improvement comprising end rail spring mounting units formed of metal, each of said units being of a generally inverted U-shape in cross section having a substantially horizontal top portion and a pair of depending leg portions, said mounting units being secured to the end rails in positions such that the top portions of said mounting units and said top surfaces of said side rails are substantially coplanar, each of said mounting units extending between the side rails to the corners of said frame, and means forming pairs of aligned slots at evenly spaced locations on said mounting unit top portions, said horizontal attaching portions of said longitudinal main springs being located in said pairs of slots in frictional engagement with the ends thereof, thereby securing said longitudinal main springs to said end rail mounting units and thus to said frame.

4,207,635

RELAXING FURNITURE ESPECIALLY DESIGNED FOR THE VENTRAL AND/OR DORSAL DECUBITUS

Michel Leroy, 115 avenue de Fontainebleau, 77250 Veneux les Sablons, France

Filed Sep. 5, 1978, Ser. No. 939,234
Claims priority, application France, Sep. 6, 1977, 77 26903; Oct. 28, 1977, 77 32553
Int. Cl.[2] A47C 3/00, 25/00
U.S. Cl. 5—437 14 Claims



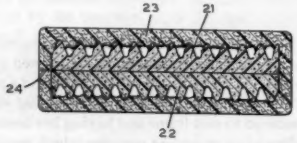
1. Relaxing furniture, such as a piece of garden or beach furniture, comprising a reversible couch provided with two opposite rest surfaces, the first of which allows a comfortable ventral decubitus, and in a zone situated substantially in the upper part of its middle third is provided with a swell which supports the periumbilical and subumbilical zones in a manner such that when a user lies face downwardly thereon said first rest surface gives a kyphosis curvature to the spinal column of said user in the region of the lumbar vertebrae, the second of said rest surface being provided with a depressed zone which is complementary to the swell in said first surface to provide the user with a comfortable dorsal decubitus in a manner such that when said user lies face upwardly on said second rest surface said lumbar vertebrae region is also given a kyphosis curvature.

4,207,636

CUSHION CONSTRUCTION

Julius J. Ceriani, Freeland, Pa., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Sep. 27, 1976, Ser. No. 720,926
Int. Cl.[2] A47C 27/15
U.S. Cl. 5—481 6 Claims



1. In a furniture cushion designed to be covered for use, comprising a core of resilient flexible foam material wrapped with at least one layer of a batt of resilient non-woven fiberfill material, the improvement which comprises providing the foam core with front and rear convoluted surfaces which are wrapped with a batt of said fiberfill material from one to two inches thick and ranging in density from ¾ of an ounce to two ounces per square foot, which results in improved seating comfort and improved retention of shape and tailored look after extended use.

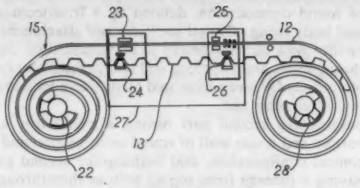
4,207,637

BEEHIVE

Mark J. Niebur, Box 753, Malta, Mont. 59538

Filed Aug. 17, 1978, Ser. No. 934,698
Int. Cl.[2] A01K 47/00
U.S. Cl. 6—1 10 Claims

10. A method of cleaning a beehive including a continuously wound combination of a resilient cellular strip and a plastic strip corrugated transversely of its length, the steps comprising separating said cellular strip from said corrugated plastic strip, cleaning said strips while separated to remove larvae therefrom, recombining said cellular and plastic strips, rewinding



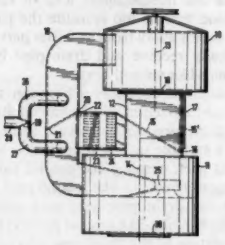
said cellular and plastic strips into said wound strip combination.

4,207,638

DRY-CLEANING METHOD AND ARRANGEMENT

Erwin Biesinger, and Eckard Möllendorf, both of Rottenburg, Fed. Rep. of Germany, assignors to Seco Maschinenbau GmbH & Co KG, Rottenburg, Fed. Rep. of Germany

Filed Jan. 18, 1978, Ser. No. 870,573
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1977, 2704020
Int. Cl.[2] D06F 29/02
U.S. Cl. 8—150 25 Claims



1. A dry-cleaning method for cleaning of textile and similar articles, comprising the steps of providing a cleaning chamber and a separate spaced-apart drying chamber which may be communicated with one another; cleaning the articles in the cleaning chamber while the same is out of communication with the drying chamber; establishing communication between the chambers and transporting the cleaned articles from the cleaning chamber into the drying chamber with a stream of air circulating in a closed path; interrupting communication between the chambers; and thereafter drying the transported articles in the drying chamber with said stream of air.

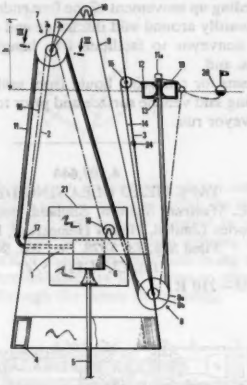
2. A dry-cleaning arrangement for cleaning of textile and similar articles, comprising means forming a first chamber for cleaning the articles; means forming a second separate chamber for drying the articles by air; means for selectively establishing and interrupting communication between said chambers so as to permit the cleaned articles to be transported from said first into said second chamber; air inducing means; an air passage communicating with both of said chambers and with said air inducing means; and means for causing a flow of induced air through said air passage into said first chamber when said chambers are in communication with one another so as to transport the cleaned articles from said first chamber into said second chamber, and for causing a flow of induced air to travel in a closed path through said second chamber when the communication between said chambers is interrupted so as to dry the cleaned articles.

4,207,639

FLOATING TERMINAL FOR LOADING AND/OR UNLOADING TANKERS

Xuong Nguyen Duc, Rueil Malmaison, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Mar. 14, 1978, Ser. No. 886,423
Claims priority, application France, Mar. 25, 1977, 77 09254
Int. Cl.[2] B63B *21/52, 51/02*
U.S. Cl. 9—8 P 6 Claims



1. A loading and/or unloading floating terminal for a tanker, comprising a buoyant structure, means for anchoring this structure, a supply pipe connecting the terminal to a fluid source, a flexible delivery pipe, these pipes communicating with each other through a coupling device carried by the floating terminal, this terminal comprising an element separate from said structure, said element permanently floating on the water surface and supporting the free end of said delivery pipe, and a heavy element suspended from the delivery pipe so that the latter forms between said coupling device and said floating element at least one loop portion when no traction force is exerted on the free end of the delivery pipe, and further comprising a first substantially vertical guide path, said heavy element being slidable along this guide path under the action of the external forces applied to this heavy element, and comprising at least one second guide path and at least one direction reversing means displaceable along said second guide path, said delivery pipe passing on said direction reversing means whose weight remains at any time lower than that of said heavy element, a cable of determined length connecting said heavy element to said direction reversing means and passing on a pulley which is stationary on the floating terminal and located at a higher level than said heavy element and said direction reversing means.

4,207,640

DEVICE WITH ROTATING BRUSH AND BUILT-IN LIQUID WASHING AGENTS FEEDER

Milan Sekula, and Nikola Sekula, both of Trnjanske ledine 1, 41000 Zagreb, Yugoslavia

Filed Jun. 8, 1978, Ser. No. 913,535
Claims priority, application Yugoslavia, Jun. 10, 1977, 1442/77
Int. Cl.[2] A46B *13/06*
U.S. Cl. 15—29 1 Claim

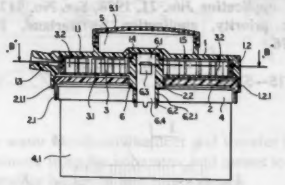
1. A washing device comprising:

a flat circular downwardly open internally threaded housing formed with a lateral nipple for connection to a source of water, said nipple opening into said housing at a nozzle adapted to train a jet into the housing;

a downwardly open flat cover threaded into said housing and defining a flat chamber therewith into which said jet is directed, said cover being formed with a central bore;

a rotary unit including a a rotary disk received in said chamber and formed along its edge with a multiplicity of equispaced upstanding vanes each comprising a straight section and an arcuate section inwardly of the straight section said vanes being positiond to be driven by said jet and thereby propel said rotary unit;

a hollow shaft journaled in said housing and said cover and extending through said bore while being connected to said rotary unit so as to be rotated thereby, said housing being provided with an upper wall formed with a central recess receiving said shaft and aligned with said bore;



a brush connected to said shaft below said cover whereby said brush is driven with said shaft by said rotary unit , said shaft having a lateral opening communicating with the interior of said chamber whereby liquid is fed through said shaft to said brush; and

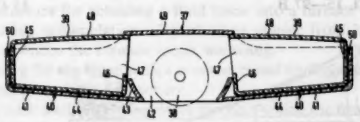
means defining a liquid-detergent compartment above said wall for dispensing liquid detergent to said chamber, said means including an annular wall upstanding from said wall of said housing and a cover threaded onto said upstanding wall, said compartment communicating with said chamber by a passage formed in said wall of said housing inwardly of said annular wall and said annular wall lying of the array of vanes.

4,207,641

CARPET SWEEPING DEVICE

Johannes Liebscher, Nassau, and Rolf G. Schülein, Singhofen, both of Fed. Rep. of Germany, assignors to Leifheit International Günter Leifheit, Nassau, Fed. Rep. of Germany

Filed Dec. 30, 1976, Ser. No. 758,548
Claims priority, application Fed. Rep. of Germany, Jan. 2, 1976, 2600102; Feb. 13, 1976, 2605835
Int. Cl.[2] A47L *11/08*
U.S. Cl. 15—41 R 6 Claims



1. A device for sweeping surfaces, particularly carpets and the like, comprising a housing having a top and a bottom which respectively face away from and toward a surface to be swept when the device assumes an operative position with respect thereto and including a plurality of walls which together bound at least one compartment which has an upwardly open end at said top of said housing; at least one brush which is so mounted on said housing for rotation about an axis as to contact the surface at said bottom of said housing; means for rotating said brush about said axis for dirt to be picked up by said brush from the surface and to travel in at least one path into said compartment; at least one dirt-collecting receptacle insertable into said compartment through said upwardly open end from above and downwardly relative to said housing to be supported from below and laterally confined by said walls in a

fully inserted position in which said dirt-collecting receptacle is located in and about said path for deposition of dirt therein, and upwardly removable from said compartment; and interlocking means on said housing and on said dirt-collecting receptacle for arresting the latter in said fully inserted position thereof within said compartment against removal therefrom until disengaged.

4,207,642

WASHING PLANT, PARTICULARLY FOR CARS AND AIRPLANES

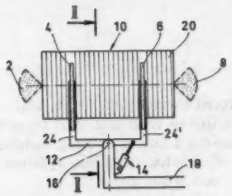
Laszlo F. Arato, Seebuchtstrasse 19, CH-6374 Buochs NW, Switzerland

Continuation of Ser. No. 764,973, Feb. 2, 1977, abandoned. This application Jun. 21, 1978, Ser. No. 917,666

Claims priority, application Switzerland, Feb. 5, 1976, 001399/76

Int. Cl.² B60S *3/06*

U.S. Cl. 15—53 AB **7 Claims**



1. A washing device for a body comprising:

a roller brush which includes two cylindrical brush elements mounted for rotation about a non-rotating brush axle, at least a portion of each element being of an elastic material; and

at least one sensor non-rotatably mounted on said brush axle, said sensor positioned between said elements in a gap therebetween and spaced from the outer boundary surface thereof for producing a signal upon a predetermined type of contact with the body.

4,207,643

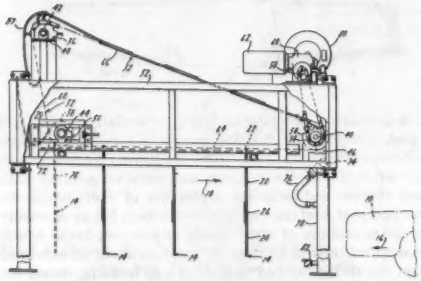
DRY WIPING SYSTEM FOR VEHICLES

Carl C. Beer, Philadelphia, and Ronald E. Steffey, Cochranton, both of Pa., assignors to Sherman Industries, Inc., Palmyra, N.J.

Filed Feb. 28, 1979, Ser. No. 16,184

Int. Cl.² B60S *3/06*

U.S. Cl. 15—97 B **13 Claims**



1. A vehicle drying apparatus comprising:

(a) an endless conveyor having an upper run and a lower run,

(b) a plurality of elongated liquid absorbing wiping units carried by said conveyor at spaced intervals there along and movable therewith, said lower run of said conveyor being positioned for bringing portions of said wiping units into wiping relationship with a vehicle surface below upon relative movement therebetween, and said spacing and length of said wiping units being such that successive wiping units overlap each other with a cohesive effect after leaving said lower run,

(c) a rotatable accelerator member at the discharge end of said upper run of said conveyor for effecting lifting of each wiping unit free of its said lapping relationship and speeding up movement of the free ends of the wiping units outwardly around said discharge end of the upper run of the conveyor to facilitate free hanging of said wiping units, and

(d) means for removing liquid from said wiping units after wiping said vehicle surface and prior to leaving said upper conveyor run.

4,207,644

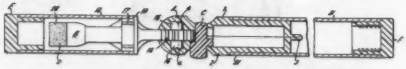
TAPE HEAD CLEANING DEVICE

William C. Westran, Seaford, England, assignor to Bib Hi-Fi Accessories Limited, Hemel Hempstead, England

Filed Sep. 13, 1978, Ser. No. 941,765

Int. Cl.² G11B *5/41*

U.S. Cl. 15—210 R **11 Claims**



1. A device which is suitable for use in cleaning magnetic heads of magnetic recording and/or playback instruments, the device comprising a mounting member for reception of tape head cleaning material, an elongate handle member pivotally connected to the mounting member, a part-ring of teeth on one of said members corresponding in shape to part of a spur gear wheel, a detent member mounted in the other of said members for sliding transversely with respect to it, parallel to the axis of the part-ring of teeth, between first and second positions, and a projection carried by the detent member which in the first position projects between two adjacent teeth of said part-ring of teeth, which two it is depending upon the orientation of the mounting member with respect to the handle member, and prevents a change in said orientation, and in said second position leaves the mounting member free to rotate about said axis with respect to the handle member, the detent member being a single straight piece of material, a first portion of which has a local thickening providing said projection, a second portion of the detent member beside the first portion facing and lying very close to said part-ring of teeth in the second position of the detent member.

4,207,645

ENGINE ACCESSORY

Douglas A. Suckling, 12 Snowdon Rd., Christchurch, New Zealand (5)

Filed Nov. 16, 1978, Ser. No. 961,058

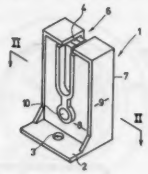
Claims priority, application New Zealand, Aug. 1, 1978, 188022

Int. Cl.² F01M *11/12*

U.S. Cl. 15—210 B **2 Claims**

1. A device for cleaning a dipstick comprising a two-part housing including a female part and a male part, said female part having a rear wall means, peripheral wall means, an open front and a mounting part extending from a first portion of said peripheral wall means for attaching the housing to an object, means defining a elongated opening in said female part extending across a second portion of said peripheral wall means and along a portion of said rear wall means, said male part fitting in said open front of said female part and including an elongated opening aligning with said elongated opening in said female

part to define therewith a recess for receiving a dipstick to be cleaned, means for fixing said male part to said female part in said open front of said female part to define a receptacle for a cleaning means, said receptacle being bounded by said rear wall means and peripheral wall means of said female part and by said male part, cleaning means recieved within said receptacle and being supported by said rear wall means said peripheral



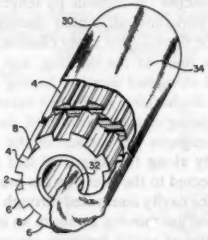
wall means and said male part, said cleaning means comprising a plurality of layers of flexible cleaning material, the individual layers extending in planes substantially parallel to said rear wall means and said male part and means defining opposed cleaning faces in each of said layers, said faces being mutually aligned and being accomodated in said recess to allow a dipstick to be drawn through the layers for cleaning.

4,207,646

CHALKBOARD ERASERS

Robert D. Osborne, Box 377, Rural Retreat, Va. 24368

Filed May 11, 1979, Ser. No. 38,221
Int. Cl.[2] B43L *21/00*
U.S. Cl. 15—224 **6 Claims**



1. A chalkboard eraser comprising an elongated rigid tubular core member, and a resilient body member fixed to said core member and disposed about said core member and generally coextensive therewith, said body member having alternate lands and grooves extending lengthwise and disposed about its periphery.

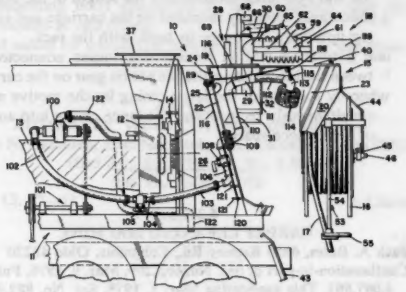
4,207,647

MOBILE SEWER CLEANING AND VACUUM UNIT

Philip C. Masters, Ashland, Ohio, assignor to McNeil Corporation, Akron, Ohio

Continuation-in-part of Ser. No. 807,225, Jun. 16, 1977, abandoned. This application Dec. 27, 1978, Ser. No. 973,606
Int. Cl.[2] B08B *3/02*
U.S. Cl. 15—302 **19 Claims**

1. Mobile apparatus for cleaning sewers and the like comprising a vehicular body member; a chamber for collecting debris mounted on said vehicular body member; conduit means communicating with said chamber and adapted to be lowered into the sewer; a hose adapted to be lowered into the sewer to carry water to flush the same; a hose reel carried by said chamber and carrying said hose; vacuum means communicating with said chamber and drawing air through said conduit means and said chamber whereby debris and water are picked up from the sewer, drawn through said conduit means and deposited in said chamber; suction strainer means selectively positionable within said chamber; pump means selectively operable



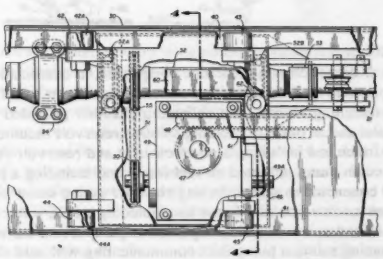
to remove the water from said chamber and transfer the same to a location remote from the apparatus; and means to connect said suction strainer means to said pump means.

4,207,648

MECHANISM FOR ROTATING AND RECIPROCATING A SOOT BLOWER

Robert P. Sullivan, Chattanooga, and Clyde L. Jacobs, Signal Mountain, both of Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 15, 1979, Ser. No. 3,557
Int. Cl.[2] F23J *3/02*
U.S. Cl. 15—316 R **5 Claims**



3. Structure for actuating a fluid lance into a furnace space for cutting accumulation of particulate matter from heated surfaces within the furnace space, including,

a casing for the lance with a cross-sectional configuration of four sides forming a square,

a furnace wall with an aperture through which the front end of the lance casing is inserted to position a discharge nozzle to impinge cleaning fluid from within the lance casing on the furnace surfaces to be cleaned,

a sealing box mounted on the external side of the furnace wall and about the opening for the lance,

an elongated open-bottomed housing connected by its front end to the sealing box in order that the housing will be longitudinally moved as the furnace wall shifts position under the varying thermal loads on the furnace,

a guide ring rotatably mounted on the front end of the housing with a central opening accommodating the lance housing,

at least two roll bearings mounted on the guide ring to engage flat surfaces of the lance casing,

motive means connected to the guide ring for rotation of the guide ring and roll bearings and lance casing,

a carriage, mounted to reciprocate on a track mounted in the housing attached to the rear of the lance casing,

a rack mounted on the under surface of the top of the housing and extending substantially the length of the housing,

a pinion gear rotatably mounted on the carriage and extending upwardly to engage its teeth with the rack,

and a rotative motion transmitting means connected between the lance casing and the pinion gear on the carriage,

whereby rotation of the lance casing by the motive means simultaneously reciprocates the lance casing into and out of the furnace space.

4,207,649

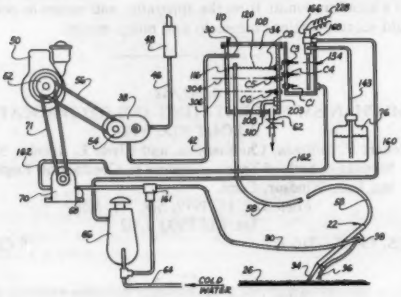
CARPET CLEANING MACHINE

Jack A. Bates, 4654 Kenney Rd., Columbus, Ohio 43220

Continuation-in-part of Ser. No. 665,269, Mar. 9, 1976, Pat. No. 4,087,881. This application Mar. 1, 1978, Ser. No. 882,407

Int. Cl.[2] A47L *11/34*

U.S. Cl. 15—319 **14 Claims**



1. A carpet cleaning machine comprising, in combination, a frame; a dirty fluid collecting means mounted on said frame and including a dirty fluid collecting chamber provided with an inlet and an outlet; a cleaning solution reservoir mounted on said frame and including a reservoir inlet and reservoir outlet; a vacuum pump mounted on said frame and including a pump inlet connected to said collecting chamber outlet; water heater means mounted on said frame and including a cold water inlet and a hot water outlet; cleaning solution pump means including a cleaning solution pump inlet communicating with said cleaning fluid reservoir outlet and a cleaning solution pump outlet; a cleaning solution flow controller including a flow controller intlet communicating with said hot water outlet and a flow controller outlet communicating with said reservoir inlet; a manually manipulatable carpet cleaning tool including a tool outlet for dispensing mixture of water and cleaning solution on a carpet and tool inlet for collecting dirty fluid from the carpet; a flexible cleaning solution conduit connecting said tool outlet with said cleaning solution pump outlet; a flexible dirty fluid conduit connecting said tool inlet with said dirty fluid collecting chamber inlet; power means for driving said pumps; vacuum cut-off means for terminating the suction at said tool inlet, said vacuum cut off means including a safety controller for automatically terminating operation of the power means and vacuum pump responsive to the rising of dirty fluid to a predetermined fluid level in said dirty fluid collecting chamber; and automatic discharge means for said dirty fluid collecting chamber, said discharge means including a discharge controller for switching said discharge means to an operative condition responsive to the rising of dirty fluid to a predetermined upper fluid level, and for switching said discharge means to an inoperative condition responsive to the falling of dirty fluid to a predetermined lower fluid level.

4,207,650

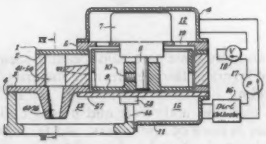
CLEANER USING HIGH VELOCITY AIR JETS HAVING A DOUBLE VALVE HAVING AN EQUAL NUMBER OF JET NOZZLES OPERATING AT ALL TIMES

W. Paul Crise, 4921 NE. 2nd Ave., Pompano Beach, Fla. 33064

Continuation-in-part of Ser. No. 786,257, Apr. 11, 1977, Pat. No. 4,141,103. This application Feb. 27, 1979, Ser. No. 15,877

Int. Cl.[2] A47L *5/14*

U.S. Cl. 15—404 **4 Claims**



1. A cleaning tool for carpet or material, including, an elongated member connected throughout its length with a normally substantially horizontal elongated opening, adapted to engage the surface of the material being cleaned; an elongated cavity, permanently open to the opening, and ending as an outlet opening, said elongated member having a plurality of nozzle passages for discharging gas from a valve rotor cavity against the material being cleaned, positioned above where the elongated opening engages the surface of the material, and spaced longitudinally along the length of said member, said outlet opening connected to the inlet of a gas moving means; a cylindrical valve rotor cavity connected through inlet passages from the outlet of said gas moving means to an inlet manifold, and having a plurality of outlet passages spaced around the circumference of said rotor cavity, arranged in a plurality of rows, one row above the other leading away from it, each outlet passage connecting separately to at least one of the nozzle passages for discharging jets of gas from said valve rotor cavity against the material being cleaned, siad outlet passages leading from the cylindrical valve rotor cavity to the nozzle passages being so proportioned that the areas of their cross-sections vary substantially in proportion to a function of their length, the areas of their cross-sections increasing gradually as the passages leave the valve rotor cavity, until the areas of their crosssections reach a desired value; a rotatable valve member positioned in said valve rotor cavity, wherein the improvement comprises:

a plurality of circular outer wall openings of said valve rotor member arranged in a plurality of rows one row above the other, positioned vertically so that said openings in the outer wall of said valve rotor member will be on the same level as that of the outlet passages leading from the cylindrical valve rotor cavity to the jet nozzle passages, said openings in the outer wall of the valve rotor being so positioned around its circumference that when rotated, the same number of jet nozzle passages will receive gas at all times;

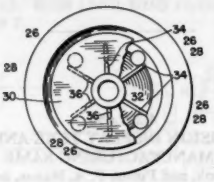
said valve rotor being connected to means adapted to rotate the valve rotor at the desired speed.

4,207,651

SWIVEL CASTER HAVING THREAD PROTECTION

Leo Dupuis, 67 Longedge Ave., Fitchburg, Mass. 01420

Filed Mar. 30, 1978, Ser. No. 891,557
Int. Cl.[2] B60B 33/00
U.S. Cl. 16—41 7 Claims



1. A swivel caster comprising a wheel, a generally hemispherical member attached to and mounting the wheel, the edge of the hemispherical member approaching the wheel closely, means on the hemispherical member for attachment to an object,

and indentations in the periphery of the hemispherical member at the edge thereof,

the indentations being provided with side surfaces that are in general tangential to circles having axes generally coincident with the axis of the hemispherical member,

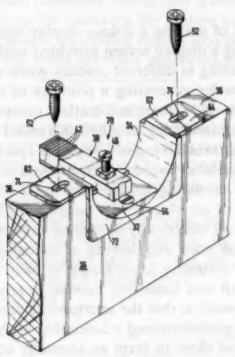
said side surfaces having sharpened edges.

4,207,652

MOUNTING ELEMENT FOR FURNITURE HINGES

Horst LautenschlMUL/a/ ger, Reinheim, Fed. Rep. of Germany, assignor to Mepla Inc., High Point, N.C.

Filed Jul. 28, 1978, Ser. No. 928,776
Int. Cl.[2] E05D 7/04
U.S. Cl. 16—130 11 Claims



1. In combination:

a piece of furniture having a carcass wall and a frame connected to the carcass wall and extending at an angle with respect to the carcass wall;

said frame having a front face, a rear face substantially parallel to said front face, and an inner frame edge extending substantially perpendicular to said faces and spaced from said wall;

said face defining a recess extending from said inner frame edge towards said carcass wall and from said front face to and through said rear face;

a mounting plate for supporting part of an articulated hinge for connecting a door to said piece of furniture, which door is to cover part of said frame between said frame edge and said carcass wall said mounting plate extending from within said recess substantially parallel to said frame edge and spaced from said carcass wall and beyond said rear face;

a mounting body connected to said mounting plate and located in said recess;

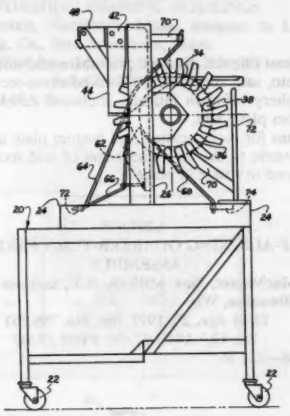
and means for connecting said mounting body to said frame.

4,207,653

AUTOMATIC WING CUTTING APPARATUS

Geno N. Gasbarro, 1305 Noe Bixby Rd., Columbus, Ohio 43227

Filed Jan. 22, 1979, Ser. No. 5,095
Int. Cl.[2] A22C 21/00
U.S. Cl. 17—11 6 Claims



1. An automated poultry wing cutting apparatus comprising, in combination, a support frame; a wing retaining means including a drum-like member rotatably mounted on said support frame and provided with a plurality of axially extending wing receiving grooves disposed on the outer surface and circumferentially spaced from one another, and a plurality of slots transversely intersecting said grooves and axially spaced from one another; knife means mounted on said support frame and having a cutting edge disposed within a predetermined portion of one of said slots at a given angular position; and at least a pair of wing engaging members mounted to said support frame, and a respective one having a portion extending into and biased towards the bottom of a portion of a different one of said slots at an angular position near the cutting edge of said knife means to engage in force-transmitting relationship a poultry wing carried in one of said grooves as said cutting edge engages said wing at a predetermined location; and drive means operatively connected to said wing retaining means causing rotation about its axis.

4,207,654

DEVICE FOR PREPARING COHERENT PRODUCTS FROM DEFORMABLE FOODSTUFFS

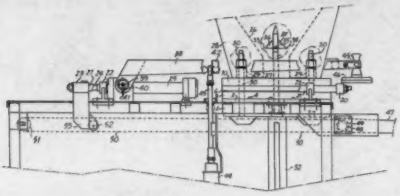
Wilhelmus F. A. Koppens, Bakel, Netherlands, assignor to Koppens Machinefabriek B.V., Bakel, Netherlands

Division of Ser. No. 776,226, Mar. 10, 1977, abandoned. This application Jun. 5, 1978, Ser. No. 912,187
Claims priority, application Netherlands, Mar. 12, 1976, 7602595; Nov. 12, 1976, 7612573
Int. Cl.[2] A22C 7/00
U.S. Cl. 17—32 7 Claims

1. In an apparatus for the threading of a lump of foodstuffs, the improvement comprising:

(a) a stick feeder trough;

(b) a bottom plate located under said stick feeder trough and having at least one slot therein for receiving a stick;
(c) a pin slidably received in said slot and cooperating therewith for displacing said stick so as to cause it to penetrate said foodstuff;



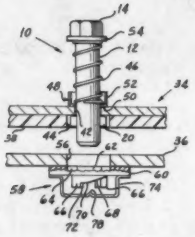
(d) at least one rod disposed proximate said slot and parallel thereto, said rod having a curved cross-section with its periphery being in intimate frictional contact with said bottom plate; and,
(e) means for reciprocating said bottom plate in a direction transverse to the long dimension of said rod for causing said rod to rotate in place.

4,207,655

SELF-ALIGNING QUARTER-TURN FASTENER ASSEMBLY

Edward MacMaster, New Milford, N.J., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Apr. 25, 1977, Ser. No. 790,331
Int. Cl.[2] A44B *17/00*; F16B *19/00*
U.S. Cl. 24—221 R **6 Claims**



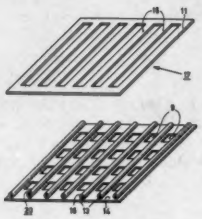
1. A fastener-and-receptacle assembly including in combination a first member having opposed sides and an aperture extending between said sides, a fastener having a shaft extending through said aperture, a locking element extending generally radially outwardly from said shaft on one side of said member and beyond the edge of said aperture to prevent said element from passing through said aperture, said member having portions defining a recess on said one side capable of completely receiving said locking element, said portions restraining said element from rotary movement when in said recess, means for biasing said locking element in such a direction and over such a range as to urge said element completely into said recess when said element is aligned therewith, said locking element being movable axially out of said recess to an extended position, the end of the shaft on said one side of said first member extending outwardly from said recess when said locking element is urged therein by said biasing means, a second member, a receptacle carried by said second member, said receptacle having an entry opening with a configuration corresponding generally to that of said recess, said first and second members being relatively movable to bring said fastener and said receptacle into register, said receptacle entry opening accepting said locking element when moved axially from an aligned position in said recess toward said extended position, and means on said receptacle responsive to rotary movement of said element from said aligned position for retaining said locking element in said extended position when rotated from said aligned position, wherein said biasing means further comprises an annular retainer disposed around said shaft between said first member and said biasing means.

4,207,656

COLOR TELEVISION DISPLAY TUBE AND METHOD OF MANUFACTURING SAME

Johannes van Esdonk, and Petrus F. A. Haans, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 757,347, Jan. 6, 1977, Pat. No. 4,121,131.
This application Jul. 26, 1978, Ser. No. 928,171
Claims priority, application Netherlands, Jan. 16, 1976, 7600422
Int. Cl.[2] H01J *9/14, 9/18*
U.S. Cl. 29—25.14 **4 Claims**



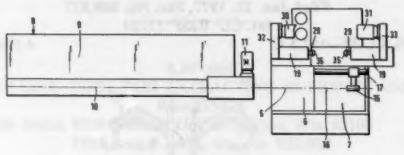
1. A method of making a colour display tube including an envelope having a display screen provided with a plurality of regions luminescing in different colours when struck by electrons and means for generating a plurality of electron beams directed towards said screen, said method comprising the steps of: positioning an insulating member on a metal sheet having a plurality of apertures arranged in spaced apart rows so that said insulating member extends between said rows and across said sheet, said insulating member having a solid core comprised entirely of an electrically insulating material and an outer jacket of an electrically insulating material, said jacket surrounding said core and having a softening temperature lower than the softening temperature of said core; bringing into contact with said insulating member a second apertured metal sheet oriented so that the apertures in said second sheet are aligned in a predetermined relationship with the apertures in the first-named sheet to form an assembly comprising said sheets with said insulating member therebetween; heating said assembly to a temperature at which said jacket is softened sufficiently to flow into contact with and adherently join said sheets to said core, said temperature being lower than said softening temperature of said core so that said core remains solid and forms an insulating spacer which maintains said sheets spaced a predetermined distance from each other to thereby form a colour selection electrode such that upon application of a potential difference between said sheets electron focusing fields are produced in said apertures; and mounting said electrode in said envelope between said screen and said beam generating means at a position relative to said screen such that said beams pass through said apertures and impinge on regions luminescing in different colours each associated with one of said beams.

4,207,657

SEPARATING DEVICE FOR BAR AND PIPE-SHAPED WORKPIECES

Rudolf Wagner, Stuttgart, Fed. Rep. of Germany, assignor to REMS-WERK Christian Föll und Söhne GmbH & Co., Waiblingen, Fed. Rep. of Germany

Filed Aug. 4, 1978, Ser. No. 930,934
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1977, 2735189
Int. Cl.[2] B21B *15/00*; B23B *13/00, 47/00*
U.S. Cl. 29—33 T 9 Claims



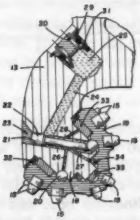
1. A separating device, especially cut-off machine, for bar and pipe-shaped workpieces, which includes in combination: a support, a rotatably driven separating unit supported by said support for cutting off a section from pipe and bar stock, a chucking device also supported by said support for chucking the section to be cut off from said stock, machining means also supported by said support for machining the ends of the respective cut-off section, and a combined pick-up and transfer unit supported also by said support and operable to pick up a cut-off section from said first chucking device and transfer said cut-off section to said machining means, said machining means itself including a second chucking device located in feeding range of said combined pick-up and transfer unit for holding the cut-off section during its end face machining, said separating unit and said machining means as well as said combination pick-up and transfer unit being arranged in common on said support, said machining means including at least one machining unit and being arranged within the area of and adjacent said separating unit, said combined pick-up and transfer unit including chucking means for chucking the section to be picked up and transferred to said machining means, said combined pick-up and transfer unit being pivotally supported by said support.

4,207,658

JOURNAL AND PILOT BEARINGS WITH ALTERNATING SURFACE AREAS OF WEAR RESISTANT AND ANTI-GALLING MATERIALS

Robert K. Sorenson, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 706,338, Jul. 19, 1976, Pat. No. 4,105,263, which is a division of Ser. No. 395,880, Sep. 10, 1973, Pat. No. 3,984,158. This application May 22, 1978, Ser. No. 908,048
Int. Cl.[2] B21D *53/10*
U.S. Cl. 29—149.5 PM 10 Claims



1. A method of providing an improved bearing system in an earth boring bit, said bearing system including a journal and a rotatable cutter positioned to rotate about said journal with a bearing element between said rotatable cutter and said journal, comprising the steps of:

pressing an alloy powder into the general shape of said bearing element, thereby producing a porous matrix element,

sintering said porous matrix element,

infiltrating an anti-galling material into said porous matrix element substantially throughout said porous matrix element,

hardening said porous matrix element, and

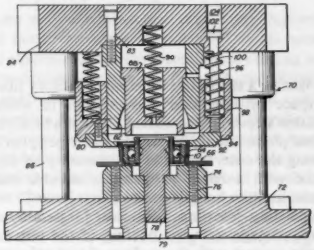
machining said porous matrix element into the specific shape of said bearing element assembling said bearing element between said rotatable cutter and said journal.

4,207,659

FORMING BEARING HOUSINGS

Alfreds Rozentals, Northboro, Mass., assignor to Lundquist Tool & Mfg. Co., Inc., Northboro, Mass.

Filed Aug. 14, 1978, Ser. No. 933,282
Int. Cl.[2] B21D *53/10*
U.S. Cl. 29—149.5 B 9 Claims



1. A method for forming a housing for a spherical outside diameter ball bearing with a predetermined torque resistance comprising:

forming a semi-finished housing having an open end and including an inside surface with a generally cylindrical portion adjacent said open end and a portion remote from said open end curved to conform to substantially half of the outside curved surface of said bearing,

placing said bearing in said semi-finished housing, and

pressing the outside of said semi-finished housing with a controlled force to conform said inside surface to said ball bearing outside surface so that said bearing in said housing has a predetermined torque resistance.

4,207,660

METHOD OF MAKING LOW COST INSERTABLE TYPE PORT LINER

Vemulapalli D. N. Rao, Bloomfield Township, Oakland County; Angelo Jaimee, Farmington Hills, and Benjamin T. Howes, Birmingham, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

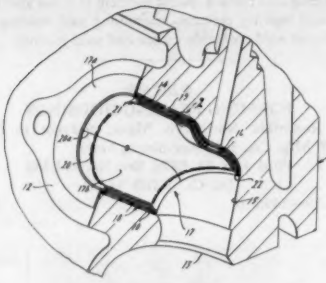
Division of Ser. No. 849,728, Nov. 9, 1977. This application Oct. 25, 1978, Ser. No. 954,798
Int. Cl.[2] B23P *15/00*
U.S. Cl. 29—156.4 WL 2 Claims

1. A method of forming an insertable type of heat insulating liner assembly for use in an internal combustion engine having an outer face and an elbowed exhaust passage extending through said face, comprising:

(a) deep-drawing a blank of plain carbon steel, having a carbon content less than 0.06% and less than 0.2% impurities, said drawn blank defining a cylindrical outer metal sleeve conforming to the inner contours of said exhaust passage less 0.015 inches, said sleeve having a flange for engagement with the outer face of said engine,

(b) stamping a blank of aluminum-chromium steel into a cylindrical configuration having a longitudinal seam, and closing said seam by welding to form an inner metal sleeve conforming to the inner contours of said outer sleeve but spaced therefrom a distance of about 0.080 inches except at leading and trailing margins thereof viewed with respect to the longitudinal extent of the inner sleeve,

(c) welding said inner and outer sleeves together at said leading and trailing margins of said inner sleeve to form a liner assembly,



(d) implanting a sleeve of insulating refractory fibers within the space between said sleeves prior to welding, said insulation sleeve having coated thereon a uniform layer of silicone plastic along at least the outer periphery thereof,

(e) coating the outer sleeve of the assembly on the exterior thereof with a room temperature curable vulcanizing silicone, and

(f) immediately inserting said coated assembly into said exhaust passage with the coating of the outer sleeve in intimate contact with the surface of said exhaust passage.

4,207,661

METHOD OF FABRICATING A CATALYST CONVERTER FOR CLEANING EXHAUSTS OF CARS

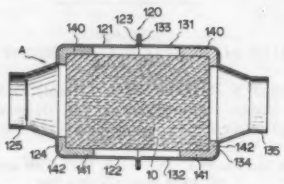
Yoshio Mase; Tadayoshi Hayashi, both of Niiza; Shinichi Natsuume, Higashi-Kurume; Yasuhisa Kobayashi, Wako, and Yoshiyuki Moriya, Kami-Fukuoka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 789,012, Apr. 20, 1977, abandoned. This application Aug. 28, 1978, Ser. No. 937,583

Claims priority, application Japan, Apr. 23, 1976, 51-51013

Int. Cl.[2] B23P *15/00;* **B01J** *8/00*

U.S. Cl. 29—157 R **5 Claims**



1. A method for constructing a catalyst converter for cleaning the exhaust of a vehicle, including the steps of:

directly fitting a pair of supporting rings formed of pressed steel wire to a catalyst body so that each of said rings of said pair is in direct contact with each end surface in the axial direction of said catalyst body provided with a plurality of passages which are parallel with each other in the axial direction;

forcibly pressing and fitting said supporting rings fitted to said catalyst body through open butted ends of two case halves by relative movement of said case halves in the axial direction thereof under a predetermined load in the axial direction; and

integrally combining said case halves together at said open butted end of each said case half under a pressure in the range of 15 to 75 kg/cm^2 in the axial direction.

4,207,662

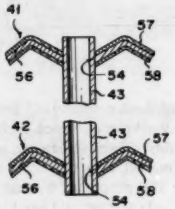
METHOD OF MANUFACTURING AN ALUMINUM HEAT EXCHANGER

Hitoshi Takenaka, Hatano, Japan, assignor to Nihon Radiator Co., Ltd., Japan

Filed Jun. 22, 1977, Ser. No. 809,027

Int. Cl.[2] B23P *15/26*

U.S. Cl. 29—157.3 C **4 Claims**



1. A method of manufacturing an aluminum heat exchanger comprising the steps of:

forming inclined surfaces on a support plate including an aluminum core clad with a brazing material layer at least on its top surface, said inclined surfaces sloping downwardly toward an aperture in the support surface, said support plate being corrugated to provide a valley with a plurality of said apertures being formed in said valley;

inserting a pipe having an outer wall made of aluminum into each said aperture with said core held in contact with said pipe;

assembling said support plate and said pipes so that, when heated, said brazing material layer is melted, and flows down toward and collects around said aperture wherein said pipe contacts said support plate; and

heating said support plate and said pipe to melt the brazing material layer, whereby the parts to be joined can be brazed together.

4,207,663

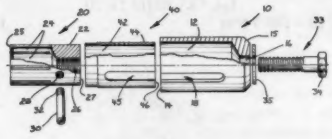
TOOL FOR REMOVING A CYLINDER LOCK

Benjamin L. Page, 107 Trinity St., Abbeville, S.C. 29620

Filed May 1, 1978, Ser. No. 901,298

Int. Cl.[2] B23P *19/04*

U.S. Cl. 29—263 **2 Claims**



1. A cylinder lock removal tool comprising, in combination, a generally cup-shaped casing having an annular side wall defining a generally cylindrical bore and an end wall defining an opening; a generally cylindrical collet sized to be received within said casing cylindrical bore and having a collet base provided with female screw threads from which base a cylindrical array of radially spaced resilient fingers extend; a sleeve having an interior cylindrical surface sized to be slid axially over in axially sliding engagement with said collet resilient fingers and base, and an exterior cylindrical surface sized to be

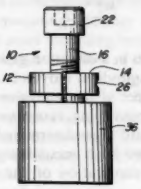
received within said casing annular wall; a bolt having a threaded shank sized to be passed through said casing opening and threadedly received within said collet female screw threads; and means for preventing relative rotational movement between said collet and casing; whereby the collet resilient fingers may be snapped about a cylinder lock, the sleeve slid axially over the collet, the casing placed against the cylinder lock mount about the sleeve and collet, and the lock removed from the mount by rotation of the bolt shank threadedly received in the collet female screw threads with the sleeve preventing separation of the collet fingers from the lock.

4,207,664

PULLING TOOL FOR EXTRACTING BUSHINGS AND BEARINGS

Louis Zoula, 8528 Horizon Dr., Burlington, Wis. 53105

Filed Aug. 8, 1978, Ser. No. 932,002
Int. Cl.[2] B23P *19/04*
U.S. Cl. 29—264 **3 Claims**



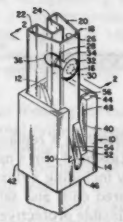
1. A pulling tool for use in extracting a bushing or bearing device from a blind hole in a support member, said pulling tool comprising first and second pulling members, each being individually insertable into a central recess of the device to be extracted, each of said pulling members having an elongated shank portion having arcuately shaped, parallel inner and outer surfaces which define an axial channel along the inner surfaces of the shank portion, the inner surfaces of the shank portions of the two pulling members being threaded complementary over at least a portion thereof adjacent one end, and each of said pulling members having a lip portion extending outwardly from the outer surface of its shank portion at said one end, the radius of curvature of said shank portions being slightly less than that of a semi-cylinder and the lip portion of each pulling member extending between first and second points spaced a predetermined distance from its longitudinal edges to permit the shank portions of the two pulling members, with their longitundinal edges in engagement, to be inserted into said central recess of the device to be extracted, with their lip portions disposed adjacent to a rearward surface of the device, and a drive member having a head portion and a threaded shank for insertion into an axial opening defined by the shank portions of the two pulling members, when their longitudinal edges are in engagement, to drive the pulling members apart, moving their peripheral lip portions into engagement with said rearward surface, said threaded shank threadingly engaging the complementary threaded surfaces of the pulling members whereby as the drive member is turned, the pulling members are driven upwardly onto the threaded shank, carrying with them the device extracted, and at least one of said pulling members having a head portion extending from its shank portion and located externally of said central recess when the shank portion of said one pulling member is inserted into said recess, said head portion being formed with a recess on a side surface thereof to receive a tool for holding said pulling members to prevent rotation of said pulling members as said drive member is turned.

4,207,665

PIN EXTRACTOR FOR INTEGRATED CIRCUIT TUBE

Harry F. Kurek, 650 Taylor, Sunnyvale, Calif. 94086

Filed Oct. 5, 1978, Ser. No. 948,924
Int. Cl.[2] B25B *27/00*
U.S. Cl. 29—270 **5 Claims**



1. For use with channel means for storing dual-in-line-type integrated circuit packages, said channel means comprising a hollow, U-shaped tube having a continuous channel wall defining a cross-sectional portion and first and second lateral cross-sectional portions extending laterally from said central cross-sectional portion to define a trough portion therebetween, said central cross-sectional portion further defining at least one first hole and at least one second hole, said first hole being in said trough portion of said channel wall and said second hole being in an outer channel wall portion aligned with said first hole, a device for dislodging a retaining pin disposed through said holes from said holes, said retaining pin comprising a shaft, a cap at one end of said shaft and a bulbous tip at the opposing end of said shaft, said shaft being of sufficient length and said bulbous tip being of sufficient diameter to fit through both said first and said second holes and to be retained in a position blocking said central cross-sectional portion, said device comprising:

a body;

a fin protruding from said body for engaging said bulbous end; and

means in said body defining a claw portion for engaging said cap adjacent said shaft;

said body comprising a first body wall and a second body wall, said first and second body walls defining a common front end and a common back end, said first body wall being disposed generally parallel with and fixedly spaced from said second body wall, said distance being sufficiently great to slideably receive said channel means longitudinally between said first and second body walls;

said fin being disposed to protrude from said first body wall toward said second body wall in longitudinal alignment from said front end to said back end, said fin being of a width sufficiently small to accommodate the minimum width of said trough portion of said channel means, said fin being varied in height from a minimum adjacent said front end to a maximum toward said back end, said maximum being sufficient to urge said bulbous end toward said first wall upon engagement of said second body wall with said outer channel wall portion in response to longitudinal movement of said channel means;

said claw defining means comprising rails varied in height from a minimum toward said front end to a maximum toward said back end on opposing sides of a slot, said slot being sufficiently wide to accommodate said shaft, and said rails being of sufficient maximum height to effect the withdrawal of said bulbous end through said first hole upon longitudinal displacement of said channel means.

4,207,666

AFTERMARKET SPEEDOMETER CABLE AND CASING ASSEMBLIES AND METHODS OF FABRICATION THEREOF

John W. Callahan, Peapack, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed May 25, 1978, Ser. No. 909,413
Int. Cl.[2] B23P 7/00
U.S. Cl. 29—402.08 1 Claim

1. Process for fabricating a replacement speedometer cable assembly and casing assembly for a motor vehicle, said replacement cable assembly including a flexible shaft cable devoid of any preformed squared ends and said replacement casing assembly including a flexible protective casing having an internal diameter substantially identical with that of casing being replaced, said flexible shaft cable and said internal diameter of said replacement casing having a ratio of diameters substantially equivalent to original equipment of said motor vehicle, said process comprising the steps of

removing speedometer cable and casing assembly to be replaced from said vehicle and using said removed assembly as a guide,

cutting a sufficient length of said replacement protective casing from a roll thereof into two pieces, one of said pieces being designated the speedometer casing piece and the other being designated the transmission casing piece,

crimping a ferrule over one end of each of said speedometer casing piece and transmission casing piece,

inserting other end of said speedometer casing piece into a lesser portion of a sleeve and crimping said sleeve thereover,

inserting other end of said transmission casing piece into open end of said sleeve until said transmission casing piece abuts said crimped speedometer casing piece,

cutting a sufficient length of said replacement flexible shaft cable from a roll thereof,

crimping a cable fitting over one end of said replacement flexible shaft cable, said cable fitting having a squared tip end matingly operable with speedometer of said vehicle,

inserting untipped end of said replacement flexible shaft cable through said ferrule crimped onto said speedometer casing piece to securely nest said cable fitting therein, said sufficient length of cable extending a distance beyond said ferrule crimped over said transmission casing piece,

crimping another cable fitting onto said extended cable, said another cable fitting having a squared tip end matingly operable with transmission of said vehicle, both of said cable fittings being incapable of passing through said internal diameter of said replacement casing,

withdrawing said transmission casing piece from said sleeve until proper length of protrusion of said tip end beyond said ferrule crimped over said transmission casing piece is obtained, and

crimping said sleeve over said transmission casing piece.

4,207,667

METHOD AND APPARATUS FOR AUTOMATIC SHEET CUTTING AND STACKING

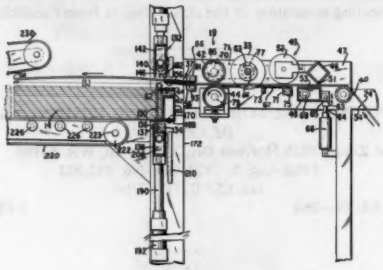
Joseph J. D'Angelo, Wycoff, and Lawrence Maccherone, Ringwood, both of N.J., assignors to Flexible Design Packaging Machine Company, Hawthorne, N.J.

Continuation of Ser. No. 832,192, Sep. 12, 1977, abandoned. This application Sep. 28, 1978, Ser. No. 946,520
Int. Cl.[2] B26D 9/00
U.S. Cl. 29—417 32 Claims

1. A method for forming a stack of sheets of foam plastic material and the like from a web thereof comprising the steps of:

A. supplying a web of material to a cutting station and transporting an edge of the web for a predetermined distance (L) beyond the cutting station above a sheet receiving surface;

B. stopping longitudinal movement of the web and captivating the web downstream from and adjacent to the cutting station;



C. cutting the web in a direction generally transverse to the direction of longitudinal movement of the web to provide a captivated sheet of predetermined length (L);

D. repeating the conveying, restraining and captivating, and cutting steps until a predetermined number (N) of captivated sheets have been accumulated in a stack; and

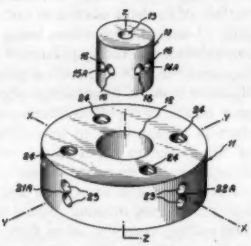
E. releasing the captivation of the stack of accumulated sheets.

4,207,668

METHOD OF MANUFACTURING A FLEXURE SUSPENSION ASSEMBLY

Peter L. Previte, Paterson, N.J., assignor to The Singer Company, Little Falls, N.J.

Division of Ser. No. 686,127, May 13, 1976, Pat. No. 4,100,813. This application Mar. 23, 1978, Ser. No. 889,494
Int. Cl.[2] B23P 9/00, 17/00; G01C 19/22
U.S. Cl. 29—434 6 Claims



1. The method of making a flexure suspension assembly having two degrees of angular rotational freedom about first and second axes which are perpendicular to each other and to a reference axis comprising the steps of

forming first and second pairs of radially disposed single axis flexure joints, having bending and longitudinal axes, in a first cylindrical member, the flexure joints of each pair being disposed on opposite sides of said first member with the bending axes thereof in axial alignment and the longitudinal axes thereof substantially parallel to the longitudinal axis of said first member, the bending axes of said first and second pairs of joints being orthogonally related to the longitudinal axis of said first member;

forming third and fourth pairs of radially disposed single axis

flexure joints, having bending and longitudinal axes, in a second cylindrical member having a central concentrically disposed aperture therein adapted to receive said first member, the flexure joints of each of said third and fourth pairs being disposed on opposite sides of said central aperture with the bending axes thereof in axial alignment and the longitudinal axes thereof substantially perpendicular to the longitudinal axis of said second member, the bending axes of said third and fourth pairs of joints being orthogonally related to the longitudinal axis of said second member;

joining said first member to said second member with said first member concentrically disposed in the central aperture of said second member to form a cylindrical integrally-connected composite member having a longitudinal axis coincident with said reference axis and the bending axes of said first and fourth pairs of flexure joints coincident with said first axis and the bending axes of said second and third pairs of flexure joints coincident with said second axis; and

separating said composite member into

a cylindrical inner mounting member having the longitudinal axis thereof coincident with said reference axis,

an annular outer mounting member concentrically disposed about said inner mounting member and separated therefrom by an annular section of said composite member,

a first gimbal member comprising a first segment of said composite member annular section coupled by said first pair of flexure joints to said inner mounting member and by said third pair of flexure joints to said outer mounting member, and

a second gimbal member comprising a second segment of said composite member annular section coupled by said second pair of flexure joints to said inner mounting member and by said fourth pair of flexure joints to said outer mounting member,

so that relative angular rotation between said inner and outer mounting members is permitted about said first and second axes.

4,207,669

DEVICE FOR MANUFACTURING AND INSERTING SINGLE-TURN COILS INTO MAGNETIC CORE SLOTS OF ELECTRICAL MACHINES

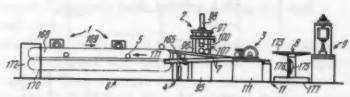
Anatoly G. Andrev, prospekt Partizansky, 87, kv. 48; Mikhail E. Makhanek, prospekt Partizansky, 93, kv. 27, and Ilya A. Rubinchik, ulitsa Kalinina, 18, kv. 22, all of Minsk, U.S.S.R.

Continuation-in-part of Ser. No. 780,439, Mar. 23, 1977, abandoned. This application Sep. 5, 1978, Ser. No. 939,798

Claims priority, application U.S.S.R., Mar. 31, 1976, 2339122

Int. Cl.[2] H02K *15/00*

U.S. Cl. 29—564.5 **9 Claims**



1. A device for manufacturing and inserting single-turn coils into the magnetic core slots of an armature of electrical machines, comprising:

at least one retaining mechanism for retaining and orienting the coils having internal and external cylinders and means for connecting said cylinders to each other,

said cylinders being mounted concentrically for rotation relative to each other and having slots whose number and location corresponds to the number and location of slots of the armature,

said retaining mechanisms being made as a satellite and being transferrable from one operating position to another;

a transport mechanism, for transferring said retaining mechanisms from one operating position to another, comprising a chain conveyer with a drive and inclined gravity runners;

a loop shaping mechanism, for bending a wire and shaping loops, providing with a decoiler, a wire tension regulator, means for feeding and straightening the wire, means for cutting the wire and a bending press, said loop shaping mechanism cutting the wire into blanks of a required length and forming loops of appropriate size and shape,

said loops being sized and shaped for insertion into said retaining mechanism;

a forming mechanism for forming the coils including means for clamping the external cylinder of said retaining mechanism and means for rotating the internal cylinder of said retaining mechanism for formation of a set of coils of the assembled loops in said retaining mechanism;

a rearranging mechanism for rearranging the set of coils provided with means for withdrawing the set of coils from said retaining mechanism and for inserting said set of coils into the armature slots;

a rotating mechanism for rotating said cylinders of the retaining mechanism and for returning them to their initial positions with respect to each other;

a storing member provided with slots for mounting the armature with the inserted coils; and

a moving mechanism, for pressing-in the set of coils and moving apart the ends of the coils, provided with means for forcing the coils into the armature slots and with means for moving apart the ends of the coils forced into the armature slots.

4,207,670

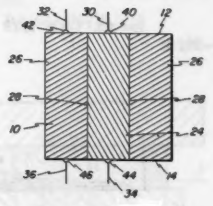
METHOD FOR MAKING A SOLID STATE NEURON

Harvey E. Cline, Stanford, Calif.; Thomas R. Anthony, and Ivar Giaever, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 28, 1978, Ser. No. 946,610

Int. Cl.[2] B01J *17/00*

U.S. Cl. 29—576 C **13 Claims**



1. A method for making a semiconductor neuron comprising the process steps of:

(a) selecting a body of semiconductor material having two opposed major surfaces, one of which has a preferred planar crystal orientation, a vertical axis perpendicular to the two opposed major surfaces, a first type conductivity, a predetermined level of resistivity and at least one first region of degenerative semiconductor material dispose in the body, extending entirely through the body and terminating in the opposed major surfaces of the body and having two opposed end surfaces, each end surface being coextensive with a respective one of the major surfaces of the body;

(b) disposing at least one droplet of a selective material on a selective portion of one of the two opposed end surfaces of at least one of the first regions;

(c) heating the body and each of the droplets to a temperature sufficient to form a melt of the droplet of material and

the semiconductor material on the major surface of the body;

(d) establishing a unidirectional thermal gradient substantially parallel to the vertical axis of the body and a preferred crystal axis of the material of the body;

(e) migrating each alloy melt by temperature gradient zone melting processing through the solid material of the respective first region from the first major surface to, and terminating in, the other of the two major opposed surfaces to form a second region of degenerative semiconductor material having solid solubility of the selective material therein and a third and opposite type conductivity than the second type conductivity, as well as to form a P-N junction at the contiguous abutting surfaces of material of opposite type conductivity, the P-N junction extending between, and terminating in, the two opposed major surfaces of the body and having the electrical characteristics of a tunnel diode;

(d) affixing a first ohmic electrical contact to one of the two opposed end surfaces of a first region;

(e) affixing a second ohmic electrical contact to one of the two opposed end surfaces of the second region which is coextensive with the one end surface of the first region;

(f) affixing a third ohmic electrical contact to the other of the two opposed end surfaces of the first region, and

(g) affixing a fourth ohmic electrical contact to the other of the two opposed end surfaces of the second region.

4,207,671

METHOD OF MANUFACTURE OF A PASSIVE ELECTRO-OPTIC DISPLAY CELL HAVING AN HELICOIDAL NEMATIC LIQUID CRYSTAL AND PASSIVE ELECTRO-OPTIC DISPLAY CELL OBTAINED BY CARRYING OUT THIS METHOD

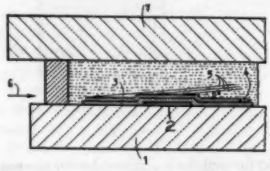
Fereydoun Gharadjedaghi, Neuchatel; Yves Ruedin, Saint-Blaise, and Rene Viennet, Neuchatel, all of Switzerland, assignors to Ebauches S.A., Switzerland

Filed Jan. 16, 1978, Ser. No. 869,581

Claims priority, application Switzerland, Jan. 21, 1977, 716/77

Int. Cl.[2] G02F 1/13

U.S. Cl. 29—592 R **6 Claims**



1. Method of manufacturing an electro-optic passive display cell including a helicoidal nematic liquid crystal disposed between two juxtaposed plates, said method comprising the steps of

depositing an alignment film on an inner face of each of the two plates by vacuum evaporating the film material at an incidence of approximately 5° with respect to the plane of the plates, the deposited film having a direction of alignment on the plates which is the same as the direction of evaporation of the film projected on the plates, and rubbing the film deposited on at least one plate in one direction only, which direction is parallel to the direction of alignment of the film, whereby the molecules of the liquid crystal are oriented at an angle greater than 0° but less than 5° with respect to the plane of the plates.

4,207,672

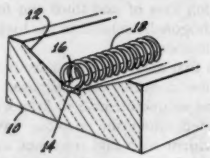
HEATER ELEMENT MOUNTING

Chester G. Wohlert, Bonita, Calif., assignor to Aerospex Corporation, National City, Calif., a part interest

Filed Dec. 18, 1978, Ser. No. 970,275

Int. Cl.[2] H01C 3/14

U.S. Cl. 29—611 **4 Claims**



1. The method of mounting heating coils on ceramic fiber insulation for electrically heated devices which comprises the steps of:

providing an iron-chromium alloy heater wire in elongated coil form;

providing a ceramic fiber insulation wall to which said heater wire coil is to be secured in a selected pattern;

applying a bead of a ceramic fiber cement to said wall in said selected pattern; said cement comprising aluminum silicate fibers in an aqueous dispersion of a colloidal inorganic oxide;

allowing a portion of the cement to penetrate the interstices of the fiber insulation wall surface;

pressing said heater wire coil against said cement following said pattern so that said cement flows up and over the bottom of each coil loop in contact with said wall; and

curing said cement whereby said heater wire coil is securely bonded to said ceramic fiber insulation wall.

4,207,673

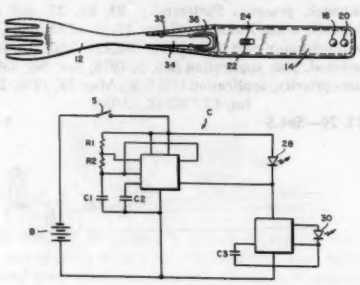
CUTTLERY

Mariam E. DiGirolamo, and Joseph E. DiGirolamo, both of 5 Page St., Danvers, Mass. 01923

Filed Jul. 31, 1978, Ser. No. 929,349

Int. Cl.[2] B25F 3/00

U.S. Cl. 30—142 **9 Claims**



1. A dietary control implement by means of which one may feed himself at controlled intervals of predetermined length, said implement comprising in combination an instrumentality for conveying food to the mouth, and a handle for manipulating the instrumentality, said handle embodying a signal-producing device a battery, a timer, and an on/off switch which may be turned on when the implement is being used to produce visible or audible signals at predetermined intervals while the implement is in use for indicating when the implement is to be

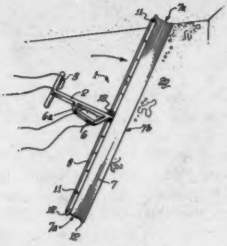
used to convey food to the mouth and when it is not to be so used.

4,207,674

WALL SCRAPING TOOL WITH BOWED BLADE

Joseph D. Heronema, 16309 Bellbrook, Covina, Calif. 91790

Filed Mar. 6, 1978, Ser. No. 883,715
Int. Cl.[2] B26B *3/00*; A47L *13/02*
U.S. Cl. 30—169 **11 Claims**



1. A wall scraping tool comprising:

an elongated, substantially flexible flat blade having a middle portion and tip end portions;

bias means mounted on the blade to bias said blade to a normally bowed shape with its tip ends down to first contact a wall surface when the tool blade is applied thereto;

handle means extending from the back middle portion of the blade, said handle means being adapted to be grasped by one hand of an operator to push the tool along the surface of the wall, and adapted to be grasped by the other hand of said operator to exert downward force on said middle portion of said blade to straighten out said bowed blade shape to produce even contact of said blade along its length against said wall surface while being pushed along the wall surface.

4,207,675

ADJUSTABLE UTILITY EXTENSION HANDLE FOR ELECTRICALLY POWERED HANDTOOL

Warren L. Causey, 2468 Lorna Dr.; Harvey P. Yeager, 620 Cheyenne Ave., and Clarence Burchell, 125 Squire Dr., all of Melbourne, Fla. 32935

Filed May 15, 1978, Ser. No. 905,400
Int. Cl.[2] B27B *17/02*
U.S. Cl. 30—296 R **12 Claims**

1. An adjustable utility extension handle for a small electrically powered handtool, said extension handle comprising in combination:

an elongated support pole having a first end and a second end;

first handle means coupled to said support pole adjacent said first end thereof for being grasped by the operator to provide a first manual support point, said first handle means including first manual control means operatively interposed along an electrical conductor which supplies electrical energy to the power handtool, said manual control means for regulating the flow of electrical energy therethrough; tool coupling means for coupling with the power handtool, said coupling means further including actuating means for engaging and actuating any electrical power control regulating the power handtool; and

positioning means including a pivot operatively interposed between said second end of said support pole and said tool coupling means for defining a pivot axis which limits relative motion therebetween, a reference plate coupled to said pivot and having a plurality of apertures therein, and a pin for operatively engaging one of said apertures in said reference plate, with said reference plate and said pin being operatively interposed between said second end of said support pole and said tool coupling means for controllably limiting the angular motion of the power handtool about said pivot, whereby the operator may set the

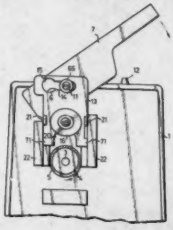
required operative angular position of the power handtool adjacent the second end of said support pole and then may electrically control the operation of the power handtool from said first handle means when the power handtool is elevated into an extended operating position.

4,207,676

CAN OPENER

Akio Okumura, Minokamo, Japan, assignor to Nikko Seiki Company Limited, Gifu, Japan

Filed Aug. 9, 1978, Ser. No. 932,121
Claims priority, application Japan, Feb. 3, 1978, 53-12763[U]; May 19, 1978, 53-60397
Int. Cl.[2] B67B *7/38*
U.S. Cl. 30—419 **8 Claims**



1. A can opener, comprising:

(a) a box-like case (1) with a top end, bottom end, and a longitudinal face;

(b) a pair of guide members (22) attached to said face in the longitudinal direction thereof;

(c) a flat movable member (13) with a front face and sides, disposed in said guide members for limited longitudinal travel, said movable member including a lower end with an engaging portion and an upper end, with a linking lateral aperture (14) with an elongated narrow portion and a large diameter portion at one side thereof;

(d) an operation lever (7) with a handle portion and a pivoted end, said pivoted end being mounted on said case so

that the lever can pivot between the horizontal and vertical planes;

(e) a linking engaging pin (10) disposed to cooperate with said linking lateral aperture so as to form a linking mechanism, said pin (10) being mounted towards the pivoted end of said lever (7), said pin (10) passing through said elongated lateral aperture (14), said pin having a flange preventing withdrawal from said elongated narrow portion, but allowing withdrawal through said large diameter portion;

(f) a cutter (16) rotatably attached towards the lower end of said movable member disposed to cut into a can from above;

(g) a feed gear with feed teeth (5), rotatably supported on the case (1) just below the cutter (16) and disposed so that when the cutter (16) moves downwardly, the edge of a can lid that is held there is is gripped between the cutter (16) and the feed teeth (5) and the can opening operation is performed by turning the can in this gripped state in the circumferencial direction of the can;

(h) a motor (100) disposed in the interior of the case (1) coupled so as to drive and turn the feed theeth of the feed gear (5); and,

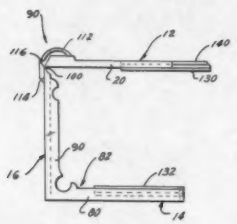
(i) a regulating member (4) disposed in the rear of the feed gear (5) and arranged so that it engages with the front face of the engaging portion of the movable member to regulate and control forward inclination of the movable member of the can opening operation.

4,207,677

DENTAL MODEL ARTICULATOR

Barry Lampert, Huntington, N.Y., assignor to Rab Tec Products Corporation, Freeport, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,442
Int. Cl.² A61C *11/00*
U.S. Cl. 433—60 **9 Claims**



1. A dental articulator, comprising:

(a) a lower jaw member;

(b) an upper jaw member;

(c) an intermediate member connecting said upper jaw member and said lower jaw member in spaced relationship one with respect to the other; and

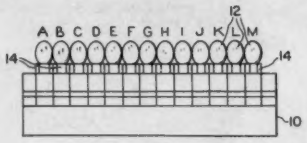
(d) articulating means operatively associated with said upper jaw member to articulate with respect to said intermediate member and said lower jaw member, said articulating means comprising detenting means comprising a toggle being disposed between the upper jaw and the intermediate member and being operatively associated with the upper jaw member for movement of the upper jaw member with respect to the intermediate member and said lower jaw member whereby the detenting means is disposed adjacent to the upper jaw member and the intermediate member.

4,207,678

MULTIPLE DENTAL SHADE GUIDE SYSTEM

William W. Jeannette, 28261 Elba, Grosse Ile, Mich. 48138

Filed Sep. 26, 1977, Ser. No. 836,488
Int. Cl.² A46B *00/00*
U.S. Cl. 433—203 **4 Claims**



1. A method for selecting a coloration for artificial teeth to match exactly that of a patient's natural teeth comprising the steps of:

(a) comparing the patient's natural teeth with a plurality of primary shade guides, deployed upon a first shade guide holder, each primary shade guide having a specific chroma percentage and each primary shade guide having a different chroma percentage than the other shade guides such that the shade guides cover a specific chroma range;

(b) selecting the primary shade guide which matches most closely the patient's natural teeth;

(c) from a plurality of secondary shade guide holders, each secondary shade guide holder corresponding to one of said primary shade guides and having a plurality of secondary shade guides provided thereon, selecting the secondary shade guide holder corresponding to the primary shade guide selected in step b;

(d) comparing the patient's natural teeth with the secondary shade guides provided on the secondary shade guide holder selected in step c, each said secondary shade guide having a chroma percentage which is defined by a predetermined value ratio with respect to the chroma percentage of the corresponding primary shade guide, achieved by the addition of a value modifier to the coloring formulation for said primary shade guide in pre-determined proportion specified for each such secondary shade guide; and

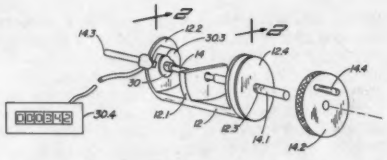
(e) selecting the secondary shade guide which matches most closely the coloration of the patient's natural teeth.

4,207,679

MICROMETER

Melvin L. Poage, St. James, Minn., assignor to Scherr-Tumico, Inc., St. James, Minn.

Filed Sep. 5, 1978, Ser. No. 939,805
Int. Cl.² G01B *3/18*
U.S. Cl. 33—166 **17 Claims**



1. In a micrometer having a bushing and a spindle extending through the bushing, the spindle and bushing having confronting surfaces:

means for permitting movement of the spindle with respect to the bushing in a single direction and for preventing relative movement of the spindle and bushing in other directions and comprising a continuous groove in one of

the confronting surfaces and extending in a single direction;

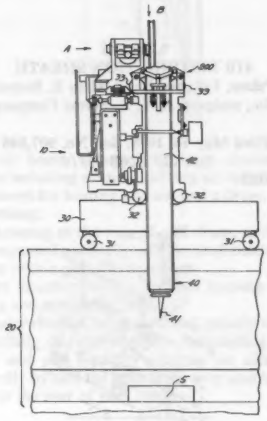
a bearing having a spheroidal end surface and protruding from the other confronting surface to contact the spheroidal surface with walls of the groove, which walls converge away from the spheroidal bearing surface and means resiliently urging the bearing into the groove and permitting resilient movement of the bearing inwardly and outwardly of the groove while maintaining continuous contact of said spheroidal bearing surface with confronting walls of the groove.

4,207,680

COORDINATE MEASURING MACHINE HAVING AN AIR COUNTERBALANCE SYSTEM

Frederick K. Bell, Centerville, and John J. Tuss, Englewood, both of Ohio, assignors to The Bendix Corporation, Southfield, Mich.

Filed May 8, 1978, Ser. No. 904,171
Int. Cl.[2] G01B 5/02
U.S. Cl. 33—174 R **11 Claims**



1. In a coordinate measuring apparatus of the type including a base; a carriage movably mounted to said base; a probe for engaging an article to be measured; and means for mounting the probe to the carriage for vertical movement of the probe with respect to the carriage, the improvement wherein the mounting means comprises:

a force converter mounted to the carriage having an input and an output, said force converter receiving a first force on the input, which first force acts through a first distance, and transmitting a second force on the output, which second force acts through a second distance with said first force being greater than said second force and said first distance being less than said second distance;

means coupled to the input of the force converter for receiving and transmitting a force of air under pressure to the force converter input; and

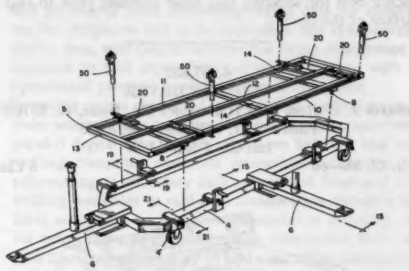
means for coupling the probe to the output of the force converter so that the weight of the probe provides a force on the output of the force converter, whereby when air under pressure is applied to the force receiving and transmitting means, the force of the air under pressure is transmitted to the force converter to balance the weight of the probe with the force of the air being greater than the weight of the probe and with the probe moving a relatively greater distance than the force receiving member.

4,207,681

VEHICLE MEASURING BRIDGE

Jeffrey T. Bayorgeon, Milwaukee; Dirk J. van Dalen, Milton, both of Wis., and Pierre N. Legrand, Soumagne, Belgium, assignors to Applied Power Inc., Milwaukee, Wis.

Division of Ser. No. 680,146, Apr. 26, 1976, Pat. No. 4,055,061.
This application Aug. 12, 1977, Ser. No. 824,073
Int. Cl.[2] G01B 3/38, 5/14
U.S. Cl. 33—180 AT **11 Claims**



1. A measuring bridge for use in an appliance for straightening and reforming a vehicle for indicating and monitoring the magnitude of correction in the repair of the vehicle, said measuring bridge being supported on a surface below the vehicle and comprising:

a frame,

a plurality of cross slide assemblies mounted on said frame for movement in longitudinal and lateral directions,

a plurality of vertical gauges mounted on certain of said cross slide assemblies and engageable with datum points on undamaged portions of the vehicle to provide predetermined reference positioning of the measuring bridge with respect to the vehicle,

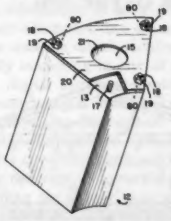
and a plurality of vertical gauges mounted on certain other of said cross slide assemblies and in coupling relationship with datum points on damaged and unaligned portions of the vehicle, said vertical gauges coupled to the damaged portions responding to the application of corrective forces and movable with the cross slide assemblies onto which they are mounted to provide a continuous indication of the magnitude of correction of the vehicle in said longitudinal and lateral directions.

4,207,682

FLUID BED NOZZLE RETAINER

Kenneth H. Kline, Catasauqua, and Walter W. Kramer, Allentown, both of Pa., assignors to Fuller Company, Bethlehem, Pa.

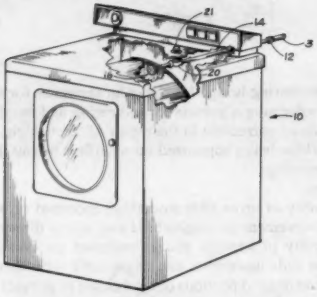
Filed Apr. 3, 1978, Ser. No. 892,639
Int. Cl.[2] F26B 13/20
U.S. Cl. 34—57 A **10 Claims**



1. For use in forming a refractory grid for a fluidized solids vessel, a refractory block having an opening therethrough

adapted to permit the passage of fluidizing gas from a lower plenum chamber to an upper material chamber of a fluidized solids vessel comprising at least one anchor bolt embedded within the refractory block and having one end extending above one surface of the block, a wear resistant plate adapted to lie atop said one surface of the block and having a first opening therethrough aligned with the opening through the refractory block and at least one second opening therethrough positioned to receive said one end of said anchor bolt, and fastener means operatively associated with said one end of said anchor bolt for securing said wear resistant plate to said one surface of the block.

4,207,683
CLOTHES DRYER
Roberta J. Horton, 9393 Hackamore Dr., Boise, Id. 83705
Filed Feb. 1, 1979, Ser. No. 8,415
Int. Cl.[2] F26B *11/04*
U.S. Cl. 34—60 **5 Claims**



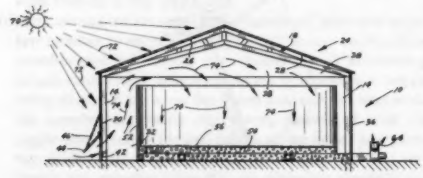
1. An improved clothes drying apparatus of the type in which clothes or other fabrics are tumbled in a substantially cylindrical tumbler which is rotatably mounted about a horizontal axis within an external housing having a stationary clothes retaining back wall and an access door, wherein the improvement comprises:

a liquid supply source;

a liquid discharge nozzle operable to spray fabric material within the tumbler, said nozzle affixed to the front surface of the clothes retaining back wall substantially flush with said surface; and

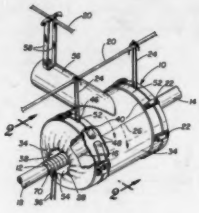
liquid conveyance means extending between the interior and exterior of said tumbler through said backwall and connecting said supply source with said nozzle.

4,207,684
CROP DRYING APPARATUS UTILIZING SOLAR ENERGY
J. Daniel Stice, R.R. 2, Roseville, Ill. 61473
Filed May 1, 1978, Ser. No. 901,517
Int. Cl.[2] F26B *19/00*
U.S. Cl. 34—93 **20 Claims**



1. Crop drying apparatus comprising a building including at least one light permeable panel therein for transmitting solar radiation therethrough into the interior of said building, said building having a roof and sides, an imperforate stationary grain storage bin within said building spaced from said light permeable panel and having an open upper end spaced beneath said roof so that air can pass over the upper edge of said bin and downwardly through said bin, at least one of said building sides having a vent therein and said bin being spaced from said one side with said vent being located in said one side in relation to said light permeable panel so that at least some of the air entering through said vent passes said light permeable panel prior to entering the upper end of said bin, said bin being upright so as to keep the crop to be dried at a uniform depth, means at the bottom of said bin for supporting the crop and also permitting all of the air entering the upper end of said bin to leave said bin at the bottom thereof, and blower means for causing air to flow through said bin via its open upper end and downwardly through the crop stored therein after the air entering the building through said vent has been heated by the solar energy transmitted through said light permeable panel.

4,207,685
AIR DISTRIBUTION SHEATH
Bradley A. Pelsue, Lakewood, and Allan E. Beavers, Littleton, both of Colo., assignors to T. A. Pelsue Company, Arapahoe, Colo.
Filed May 18, 1978, Ser. No. 907,048
Int. Cl.[2] F26B *25/14*
U.S. Cl. 34—107 **4 Claims**



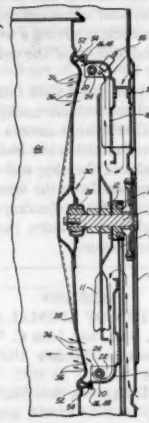
1. An air-distributing sheath for use in circulating hot air around a heat-shrinkable sleeve encasing a workpiece which comprises: a generally-rectangular sheet of heat-resistant fabric foldable into encircling relation around the sleeve to define a tubular jacket therefor open at both ends and along a joint extending therebetween, said jacket being sized to encircle said sleeve in annular spaced relation outside the latter, and said jacket having a pair of circumferential pockets therein arranged in axially-spaced substantially parallel relation to one another and to the adjacent open ends, the portions of said jacket between said pockets and the open end adjacent thereto defining blousable cuffs effective when the free edges thereof are gathered to reduce the size of said adjacent open end; an air-delivery conduit having one end connectable to a source of hot air under pressure and the other end thereof connected to deliver the latter into said tubular jacket substantially tangentially; and, a pair of arcuate rigid rib segments disposed in end to end relation within each pocket effective to maintain the tubular shape thereof to the degree required for free circulation of the hot air around the sleeve, said rib segments having adjacent ends cooperating with one another and the jacket fabric therebetween to define a hinge openable to the extent required to admit the sleeve and workpiece through the joint in said jacket.

4,207,686

AIR HEATER ARRANGEMENT FOR A CLOTHES DRYER

Thomas E. Daily, Herrin, Ill., assignor to Fedders Corporation, Edison, N.J.

Filed Dec. 19, 1977, Ser. No. 861,644
Int. Cl.[2] F26B 11/04
U.S. Cl. 34—133 5 Claims



1. In an air heater arrangement for a clothes dryer, said arrangement including a fan for driving air radially outwardly, a heater element for heating said air, and a drum, the improvement comprising:

a. a pan housing at the rear of said drum, said pan housing being mounted vertically and circumferentially enclosing said fan within said pan housing;

b. said fan mounted within said pan housing between said housing and said drum; and,

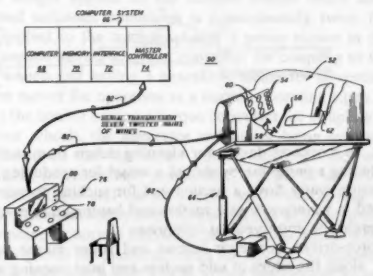
c. said heater element being mounted radially outwardly and substantially circumferentially surrounding said fan and within said pan housing; whereby air directed radially outwardly by said fan is directed over said heater element and into the rear of said drum.

4,207,687

SIMULATOR COMPLEX DATA TRANSMISSION METHOD AND SYSTEM

Robert N. Haas, Binghamton, and Carl A. Mazzini, Windsor, both of N.Y., assignors to The Singer Company, Binghamton, N.Y.

Filed May 9, 1977, Ser. No. 795,320
Int. Cl.[2] G09B 9/08
U.S. Cl. 35—12 R 18 Claims



1. A computer controlled data transmission system for use with a simulator complex which serially transmits digital information originally occuring in one of many forms, including discrete form, digital form and analog form, between data transmission circuitry and a multiplicity of widely spaced peripheral units, said system comprising:

controlling computer for monitoring input information in the form of digital data indicative of the operation of widely spaced peripheral units and for providing output information to control said operation, said output information including digital data for controlling the operation of said peripheral units, addressing digital data for identifying the peripheral unit to be controlled, and synchonizing digital data, said output information being determined in response to said input data and in accordance with an operational program contained in said computer;

reformating means connected between said controlling computer and said data transmission circuitry for transmitting parallel digital data in both directions between said controlling computer and data transmission circuitry, for reformating as necessary data transmitted from said controlling computer to said data transmission circuitry to a form acceptable to said data transmission circuitry, and for reformating as necessary data transmitted from said data transmission circuitry to said controlling computer to a form acceptable to said controlling computer; and

data transmission circuitry comprising;

master control circuitry connected between said reformating means and peripheral control circuitry, said master control circuitry comprising, a buffer memory for temporary storage of information transmitted in either direction between said computer and said peripheral control circuitry, a storage memory for storing information relative to the format of information transmitted to and received from said peripheral controlled circuitry, means for converting parallel digital data from said computer means to serial digital data suitable for transmission to said peripheral control circuitry, means for converting serial digital data received from said peripheral control circuitry to parallel digital data for transmission to said controlling computer, and means for controlling the retrieval of information from and storage of information by said buffer and storage memories,

peripheral control circuitry connected between said master control circuitry and said peripheral units, said peripheral control circuitry comprising means for determining which serial information transmitted from said master control circuitry is to be received by one of said widely spaced peripheral units, means for converting and conditioning serial information received from said master control circuitry to an electrical command signal in the form necessary for use by said peripheral units and means for converting and conditioning electrical information signals of various format received from said peripheral units to serial digital form for transmission to said master control circuitry, said electrical information signals containing information about the operation of said peripheral units, and

primary communication path connecting said master control circuitry to said peripheral control circuitry and for carrying information in serial digital format.

11. A computer controlled data transmission method for use with a simulator complex which serially transmits digital information originally occurring in one of many forms, including discrete forms, digital form and analog form, between data tranmission circuitry and a multiplicity of widely spaced peripheral units comprising the steps of:

providing output information to said data transmission circuitry from a controlling computer, said step of providing comprising the steps of generating synchronizing signals for controlling the time of data transmission, computing output data for controlling the operation of widely spaced peripheral units in response to an operational profile of one of said peripheral units stored in said controlling computer and input signals indicative of the current oper-

ation of said peripheral units, and generating addressing data for identifying the peripheral unit to be controlled;

processing in master control circuitry connected to said controlling computer data for transmission to peripheral control circuitry associated with each of said peripheral units and data received from said peripheral control circuitry for transmission to said controlling computer, said processing comprising the steps of storing information relative to the format of information transmitted to and received from peripheral control circuitry, converting parallel digital data received from said controlling computer to serial digital data suitable for transmission to said peripheral control circuitry, converting serial digital data received from said peripheral control circuitry to parallel digital data for transmission to said controlling computer, and temporarily storing in a buffer memory information transmitted between said computer and said peripheral control circuitry;

generating electrical information signals representative of the operation of said peripheral units;

processing in peripheral control circuitry connected between said master control circuitry and said peripheral units electrical information signals received from said peripheral units for transmission to said master control circuitry and data received from said master control circuitry for transmission to said peripheral units, said processing comprising the steps of converting and conditioning serial data received from said master control circuitry to electrical command signals in the form necessary for use by said peripheral units, and converting and conditioning electrical information signals of various format received from said peripheral units to serial digital form for transmission to said master control circuitry;

transmitting input data and output data in parallel form between said controlling computer and said master control circuitry when commanded by said controlling computer; and

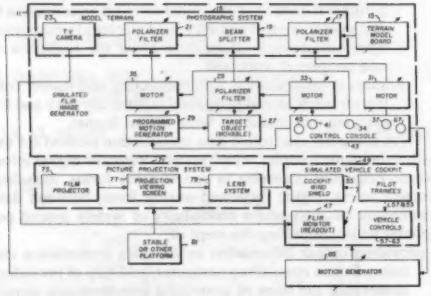
transmitting input data and output data in serial form between said master control circuitry and said peripheral control circuitry when commanded by said controlling computer.

4,207,688

PILOT TRAINING SIMULATOR

George Derderian, Maitland; Windell N. Mohon, Winter Park; Eugene D. Maldonato, and Alfred H. Rodemann, both of Maitland, all of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 11, 1977, Ser. No. 841,240
Int. Cl.[2] G09B 9/08
U.S. Cl. 35—12 N **17 Claims**



1. A pilot training simulator, comprising in combination:

model board means for producing predetermined model scenes;

television camera means spatially disposed from said predetermined model board scenes producing means and sighted along a first predetermined light path therefrom for the optical probing thereof and for producing a video signal representing an image of a predetermined model scene;

means spatially disposed from said model board means and said television camera means for superimposing a model target scene upon said predetermined model board scenes in such manner that both of said scenes may be sighted on simultaneously by said television camera means;

a simulated vehicle cockpit having a windshield and controls which correspond to those of the vehicle whose cockpit is being simulated;

means contiguously disposed with said windshield, located within said simulated vehicle cockpit, and connected to the output of said television camera means for displaying said predetermined model scene image in response to the video signal produced thereby; and

means spatially disposed from the windshield of said simulated vehicle cockpit for projecting a visible motion picture therethrough that includes the aforesaid predetermined model scene image.

4,207,689

PRESERVATION OF ANIMAL SPECIMENS

Cesar Romera-Sierra, Bath, and John C. Webb, Kingston, both of Canada, assignors to Queen's University at Kingston, Kingston, Canada

Filed Jul. 31, 1978, Ser. No. 929,748
Claims priority, application Canada, Aug. 5, 1977, 284215
Int. Cl.[2] G09B 23/36
U.S. Cl. 35—20 **16 Claims**

1. In a method for preparing freeze dried biological specimens in which a posed specimen is freeze dried at a temperature below about −10° C. and a pressure below about 0.10 torr, the improvement for preparing a substantially naturally coloured and flexible animal specimen comprising:

(a) injecting a lubricating agent into and manipulating at least selected joints in said specimen prior to freeze drying;

(b) soaking the freeze dried specimen in an organic solvent so as to remove substantially all lipids from adipose tissue and bone marrow therein; and

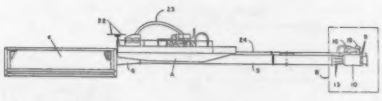
(c) applying a softening agent to and manipulating tissues of said freeze dried specimen.

4,207,690

SUCTION DEVICE FOR CLEANING BOTTOMS OF WATERWAYS AND FOR LIFTING SUNKEN TIMBER

Lauri O. Niskala, Markkinakatu 7, 96200 Rovaniemi, Finland (20)

Filed May 9, 1978, Ser. No. 904,255
Int. Cl.[2] E02F 3/92
U.S. Cl. 37—58 **9 Claims**



1. In a suction device for cleaning debris from waterways including a pump means aboard a vessel for producing a high-pressure water flow, a suction end for sucking therein debris found in waterways, said suction end having an inlet opening, wherein the improvement comprises:

force-driven conveyor screws and roller means mounted along the edges of said suction end inlet opening adapted for turning snagged material in waterways endwise into a suction pipe terminating at said inlet opening, remote-con-

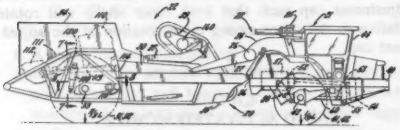
trolled, high pressure water operated, closeable control nozzles mounted on said suction end, said control nozzles being adapted to receive water flow from said pump, said water flowing from said control nozzles generating a force upon said suction end to thereby provide predetermined movement of said suction end by the selective passage of high pressure water through one or more of said control nozzles, said suction end having a counterbalance water tank for controlling the buoyance of said suction end by regulating the amount of water in said tank, underpressure flaps being mounted on said suction end adapted to open and permit water to enter said suction pipe upon the blockage of said inlet opening, a blow nozzle provided at said suction end for clearing a blockage at said inlet opening, said suction end being pivotably mounted to said vessel, and a load basket in communication with the end of said suction pipe opposite said suction end, said load basket adapted for depositing therein material sucked through said suction pipe from said suction end, said load basket adapted to be lifted from water by a lifting means.

4,207,691

FOUR-WHEEL DRIVE SCRAPER WITH MAIN PROPULSION AT REAR AXLE

John H. Hyler, Peoria; Walter E. Lott, Washington, and Clifford E. Johnson, Peoria, all of Ill., assignors to Westinghouse Air Brake Company, Pittsburgh, Pa.

Filed Nov. 20, 1978, Ser. No. 962,392
Int. Cl.² E02F *5/00*; B60K *17/34*
U.S. Cl. 37—124 **9 Claims**



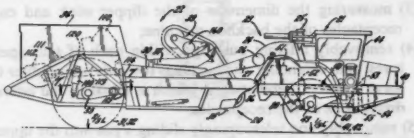
1. In an off-highway earth-moving vehicle of the scraper type, the combination comprising, a tractor section and a scraper section, the scraper section having a scraper blade and a bowl, each section having a pair of ground-engaging wheels, a draft frame providing rolling rigidity interposed between the sections, the tractor section having an axle assembly mounting the associated wheels and which is floatingly supported with respect to the tractor section to permit independent movement of the assembly in the following of ground contours, the sections of the vehicle being so proportioned in size and weight that the weight applied to the scraper wheels under both loaded and unloaded conditions is approximately twice the weight applied to the tractor wheels, a prime mover in the scraper section having a torque converter for coupling to the scraper wheels and having a generator, means for governing the prime mover for operation at a normal operating r.p.m., a motor in the tractor having a torque converter for coupling to the tractor wheels, the generator and motor being synchronously linked so that the motor continuously operates at a speed which is substantially proportional to that of the prime mover, the scraper and tractor torque converters having respective maximum horsepower output ratings at input speeds corresponding to normal operating prime mover r.p.m. which substantially total the maximum rated horsepower produced at such r.p.m. and which bear a ratio to one another on the general order of 2:1.

4,207,692

TWO ENGINE FOUR-WHEEL DRIVE SCRAPER WITH MAIN PROPULSION AT REAR AXLE

John H. Hyler, Peoria; Walter E. Lott, Washington, and Clifford E. Johnson, Peoria, all of Ill., assignors to Westinghouse Air Brake Company, Pittsburgh, Pa.

Filed Feb. 9, 1979, Ser. No. 10,695
Int. Cl.² E02F *3/64*
U.S. Cl. 37—129 **2 Claims**



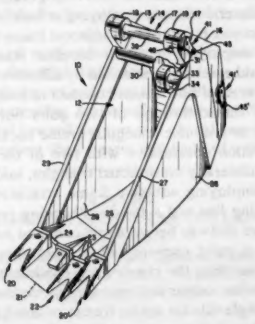
1. In an off-highway earth-moving vehicle of the scraper type, the combination comprising, a tractor section and a scraper section, the scraper section having a scraper blade and a bowl, each section having a pair of ground-engaging wheels, a draft frame providing rolling rigidity interposed between the sections, the tractor section having an axle assembly mounting the associated wheels and which is floatingly supported with respect to the tractor section to permit independent movement of the assembly in the following of ground contours, the sections of the vehicle being so proportioned in size and weight that the weight applied to the scraper wheels under both loaded and unloaded conditions is approximately twice the weight applied to the tractor wheels, a first engine in the scraper section having a first torque converter coupled to the scraper wheels, a second engine in the tractor section having a second torque converter coupled to the tractor wheels, means for governing each engine for operation at a normal operating r.p.m., the first and second torque converters having respective maximum horsepower output ratings, at input speeds corresponding to normal governed operating r.p.m., of the respective engines, which bear a ratio to one another on the general order of 2:1.

4,207,693

BACKHOE BUCKET ADAPTER BUSHING AND PIN METHOD AND APPARATUS

Charles W. Hemphill, 800 S. Fifth Ave., Mansfield, Tex. 76063

Continuation of Ser. No. 817,733, Jul. 21, 1977, Pat. No. 4,133,121, and a continuation-in-part of Ser. No. 715,560, Aug. 18, 1976, Pat. No. 4,037,337. This application Nov. 20, 1978, Ser. No. 962,101
Int. Cl.² E02F *9/28*
U.S. Cl. 37—195 **8 Claims**



1. A method of operatively attaching any one of a number of

different size digging buckets to any one of a number of different size backhoe machines comprising the steps of:

(1) affixing spaced-apart, rearwardly directed lifting ears to the excavating bucket and forming spaced-apart pairs of apertures in said ears;

(2) aligning said apertures with one another such that an upper pair of apertures are axially aligned with one another and are spaced from a lower pair of apertures, with said lower pair of apertures being axially aligned with one another;

(3) measuring the dimension of the dipper stick and curl receptacles of the backhoe machine;

(4) removably affixing bushings within each of said apertures; and, extending said bushings towards one another to leave a space therebetween which is equal to the lateral dimensions of the receptacles;

(5) removably and telescopingly sliding a pin into the upper and lower pairs of bushings, with the pin having a diameter compatible with the receptacles; and,

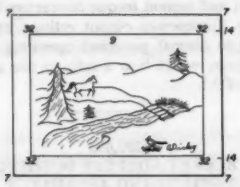
(6) affixing the dipper stick and curl receptacle, respectively, to the upper and lower pins.

4,207,694

FRAME WITH CONVERTIBLE EASEL SUPPORT

Avis M. Dickey, South Milford, Ind., assignor to Dickey, Inc., South Milford, Ind.

Filed Dec. 19, 1977, Ser. No. 861,694
Int. Cl.[2] G09F *1/12*
U.S. Cl. 40—152.1 **1 Claim**



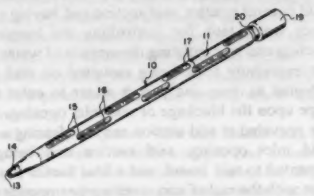
1. A new and improved inexpensive standing/hanging, easel-backed greeting card display frame wherein a centrally apertured frame panel is permanently affixed on three peripheral side edges to a coextensive frame backing, therewith creating an end-insertion one-piece window greeting card display frame, to which for standing or hanging securement is attached either a wire easel, size and configuration coextensive with the equilateral triangle employing as baseline the connector between center points of two adjacent frame back sides and additionally employing a center baseline standing/hanging protrusion, said easel being attached by adhesive strip which is nonadhesive at easel side member contact or being attached by side member thread-through of two pairs horizontal frame backing slits; or a double triangular frame backing easel, size and configuration coextensive with two of the hereinbefore described equilaterally constructed triangles, said two-triangle easel piece employing adhesive frame attachment along the common joining line and a standing/hanging protrusion with center aperture midway between said common joining baseline point and two outer corners; either easel attachment being along a line bisecting the constructed equilateral triangle top point and baseline center and extended in measurement coextensive to triangle side for square frames or along a line parallel to said bisector and one-quarter inch farther along longer frame side for rectangular frame.

4,207,695

MECHANICAL WRITING INSTRUMENT

Carmine Penza, Jr., 813 S. First Rd., Hammonton, N.J. 08037

Filed May 17, 1978, Ser. No. 906,842
Int. Cl.[2] G09F *3/00*
U.S. Cl. 40—334 **7 Claims**



1. A mechanical writing instrument having a writing means capable of protraction from the end of the writing instrument, comprising:

(a) an opaque outer casing generally cylindrical in shape,

(b) a plurality of indicia revealing ports through the outer casing located along the length of the casing,

(c) a first inner transparent cylindrical shell, fitting within the outer casing and capable of being rotated relative to the outer casing,

(d) a second inner shell fitting within the first inner shell moving with the first inner shell and having printed indicia located in circumferentially spaced rows around the second inner shell placed such that each row of indicia is positioned in alignment for each port in the outer casing,

(e) an adjustment cap, rotatably affixed to the writing instrument,

(f) protraction movement means connected to the adjustment cap and to the writing means such that when the cap is moved the writing means will protract, and

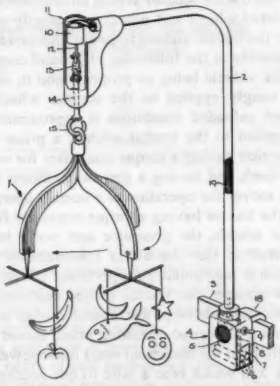
(g) connecting means between the first inner shell and the adjustment cap such that both inner shells will rotate relative to the outer casing upon rotation of the adjustment cap.

4,207,696

SOUND ACTIVATED MOBILE

Gregory E. Hyman, 22 Cross Hill Ave., Yonkers, N.Y. 10703, and Lawrence J. Greenberg, 64 Mountain Ave., Larchmont, N.Y. 10538

Filed Jul. 31, 1978, Ser. No. 929,530
Int. Cl.[2] G09F *11/00*
U.S. Cl. 40—473 **5 Claims**



1. A sound activated apparatus comprising: a rotatable mo-

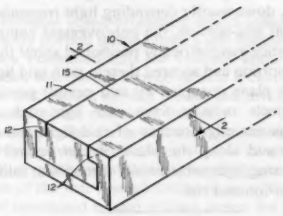
bile, electric drive means, power transmitting means including energy storage means operatively connecting said mobile to said electric drive means for rotating said mobile in response to release of energy previously stored in said energy storage means by said electric drive means and sound activated switch means operatively connected to said electric drive means for activating said electric drive means in response to sound detected by said sound activated switch means, and time delay means co-operating with said electric drive means for preventing a further activation of said electric drive means within a predetermined period of time after a prior activation of said electric drive means so that the mobile will provide a pacifying distraction to a baby in response to such baby crying but will not be energized needlessly in response to the baby crying continuously or a second time during said predetermined period.

4,207,697

MAGNETIC STRIP ATTACHMENT FOR SIGNS

Ralph W. Murphy, 832 Second St., Marietta, Ohio 45750

Filed Aug. 21, 1978, Ser. No. 935,516
Int. Cl.² G09F *7/04*
U.S. Cl. 40—600 **6 Claims**



1. A sign structure comprising

a structural body adapted to be mounted on a metallic supporting surface and having a surface portion which is positionable in juxtapposed relationship to the supporting surface,

an elongated magnetic strip formed from a flexible material and having a contacting surface which is adapted to be disposed in contacting engagement with a metallic surface in magnetically coupled engagement, and

an elongated mounting strip for securing of said magnetic strip to said structural body with the contacting surface of said magnetic strip exposed throughout its length to engage the supporting surface, said mounting strip and magnetic strip formed to mechanically interfit in cooperative interlocking engagement with said mounting strip having a mounting surface disposed adjacent the structural body surface portion in contacting engagement therewith, said structural body and said mounting strip being formed from materials which can be solvent welded and they are secured together by solvent welding.

4,207,698

DEVICE FOR LOADING MUZZLE LOADING RIFLES AND METHOD OF PREPARING THE DEVICE

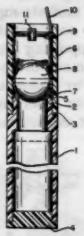
James Burson, Rte. 2 Box 614, Gresham, Oreg. 97030

Filed Feb. 13, 1978, Ser. No. 877,170
Int. Cl.² F42B *39/04*; F41C *27/00*
U.S. Cl. 42—90 **5 Claims**

1. An apparatus for loading muzzle loading weapons comprizing;

a primer holding disc;

a first powder carrying tube closed at one end;



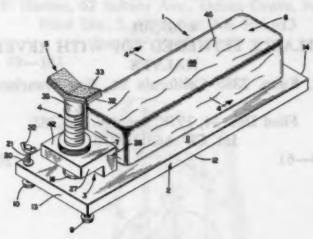
a second open ended projectile carrying tube detachably connected to the first tube and the said open end is optionally closable with the primer holding disc.

4,207,699

GUN REST CONSTRUCTION

Wayne A. Hensley, 7990 Pittsburgh Rd., North Canton, Ohio 44720

Filed Nov. 29, 1978, Ser. No. 964,731
Int. Cl.² F41C *29/00*
U.S. Cl. 42—94 **5 Claims**



1. A gun rest construction including:

(a) a generally horizontal rigid base having top and bottom surfaces, and front and rear ends;

(b) a plurality of legs mounted on the base and projecting downwardly from the bottom surface for supporting said base;

(c) a pedestal mounted on the base adjacent the front end and projecting upwardly from the top surface of said base;

(d) a vertically extending threaded opening formed in the pedestal;

(e) a threaded shaft adjustably mounted in the pedestal opening;

(f) a gun barrel support member rotatably mounted on the top of the threaded shaft; and

(g) a resilient support pad mounted on the top surface of the base and extending rearwardly from a position adjacent the pedestal toward the rear end of said base for comfortably supporting the forearm and hand of a shooter.

4,207,700

FLEXIBLY-HINGED TRIANGULAR COLLAPSIBLE NET ASSEMBLY

Gilles Marleau, 85 Brady St., Hull, Quebec, Canada (J8Y 5L6)

Filed Aug. 30, 1978, Ser. No. 937,984
Int. Cl.² A01K *77/00*
U.S. Cl. 43—12 **7 Claims**

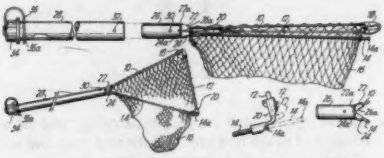
1. A flexibly-hinged triangular collapsible net assembly comprising:

a handle member having a pair of hinge fingers formed of an integral piece of flexible material extending from one end thereof;

three rigid net-supporting arms;

the first and second of said net-supporting arms each being affixed at one end to one of said pair of hinge fingers;

the third of said net-supporting arms being hingedly affixed at one end to the free end of one of said first and second net-supporting arms, by a hinge of integrally formed flexible material; and at its other end to the free end of the other one of said first and second net-supporting arms by



a hinge member of integrally formed flexible material slidably surrounding the other one of said pair of first and second net-supporting arms;

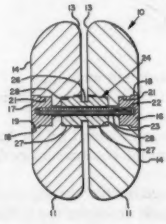
said last-named hinge member being slidably urged along the length of the other one of said first and second arms between a first position wherein the net-supporting arms are open in triangular net-supporting position, and a second position wherein said net-supporting arms are in close, side-by-side parallel relationship and said net is closed.

4,207,701

DISMANTLABLE TETHERED TOP WITH REVERSIBLE HALVES

Thomas R. Kuhn, 2383 California St., San Francisco, Calif. 94115

Filed Dec. 11, 1978, Ser. No. 968,283
Int. Cl.² A63H *1/30*
U.S. Cl. 46—61 **10 Claims**



5. A tethered top capable of being disassembled, comprising:

a pair of body sections, each having an axial bore through its center, said bores including similar counterbores in each side of each body section;

center shaft means positioned in the body section bores, including a central string guide disposed between the body sections in the assembled tethered top;

a pair of fastener means, one connected to each end of the center shaft means and removably retained in the counterbore of the body section bore, at least one of said fastener means being threaded to and unscrewable from the center shaft means; and

means associated with the fastener means and with the body section bores for preventing rotation of each fastener means with respect to the associated body section;

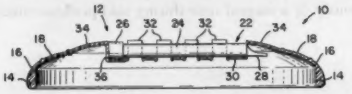
whereby the tethered top may be dismantled by relative rotation of the two body sections, which is effective to disconnect said one fastener means and the associated body section from the center shaft means, so that the two body sections may be separated and the center shaft means may be removed and replaced if desired and so that the tethered top may be assembled with either body section facing in either direction.

4,207,702

LIGHT TRANSMISSIVE FLYING SAUCER WITH CHEMICAL LIGHTSTICK

Martin R. Boatman; Phillip E. Robertson, and Martin M. Gaughan, all of Kent, Wash., assignors to Dynamic Toy Company, Inc., Seattle, Wash.

Filed Apr. 24, 1978, Ser. No. 898,705
Int. Cl.² A63H *27/00*
U.S. Cl. 46—74 D **8 Claims**



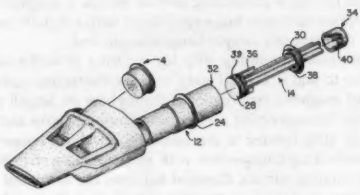
1. In a flying saucer toy having a generally planar light-transmissive central portion of circular configuration having upper and lower surfaces, an annular, downwardly depending light transmissive mid-portion surrounding said central portion and an annular, downwardly depending light transmissive rim surrounding said mid-portion, the improvement comprising a chemical light-stick symmetrically positioned about the center of said central portion and secured thereto with said light-stick intersecting the plane occupied by said central portion such that light projects radially from said light-stick directly through an adjacent edge surface of said light transmissive central portion and along the plane of said central portion thereby transferring light substantially throughout said central portion, mid-portion and rim.

4,207,703

GAME CALL

Michael Saso, Wingsetter Game Calls, P.O. Box 6143, Modesto, Calif. 95355

Filed Jul. 10, 1978, Ser. No. 923,209
Int. Cl.² A63H *5/00*
U.S. Cl. 46—177 **22 Claims**



1. A game call or the like whistle including:

(a) a housing

(b) said housing being formed to provide air chambers which extend longitudinally of said housing in side-by-side relationship

(c) a mouthpiece at the front of said housing in communication with said air chambers

(d) cap means covering the aft end of one of said air chambers for providing a fixed volume air chamber

(e) means movably positioned in the aft portion of said other air chamber for selectively changing the volume of air therein, to provide a variable volume air chamber, and

(f) vent openings in the top of said housing adjacent the mouthpiece and in communication with said constant volume air chamber and variable volume air chamber

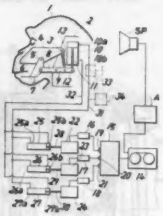
respectively, which vent openings are closed and opened by finger contact to selectively control the sound emitted from the air chambers.

4,207,704

MOVABLE SOUND PRODUCING MODEL

Mineo Akiyama, Tokyo, Japan, assignor to Tokyo Design Kogei Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1977, Ser. No. 815,247
Claims priority, application Japan, Oct. 18, 1976, 51-123792
Int. Cl.[2] A63H *33/26*
U.S. Cl. 46—232 **6 Claims**



1. A movable sound-producing model comprising:
(a) a body portion formed from a soft foamed urethane resin block contoured into the external shape of the desired model, and having formed therein a cavity for housing a link mechanism, driving means, and driving-power transmission means contained therein;
(b) driving means for generating continuous and modulated driving-power to induce movement of said model;
(c) a link mechanism having a working-end connected to a part of the soft foamed urethane resin block and another end connected to said driving means for inducing movement of the model;
(d) sound generating means for generating an audio signal;
(e) accoustic converting means connected to said sound generating means for producing a sound upon receiving an audio signal from said sound generating means;
(f) level detecting means connected to said sound generating means for detecting an audio signal from said sound generating means when the generated signal is higher than a predetermined level;
(g) driving power transmission means within said cavity for transmitting driving-power from said driving unit to said link mechanism in response to a driving control signal; and
(h) control means connected to said driving-power transmission means and said level detecting means for controlling the operation of said power transmission means so as to synchronize the generation of the sound emitted by said sound generating means with the movement of the model in accordance with a detected output signal from said level detecting means to produce a driving control signal at a predetermined period of time to said power transmission means.

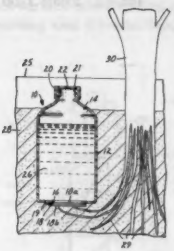
4,207,705

PLANT NOURISHMENT DELIVERY DEVICE

Louis A. Errede, North Oaks, and Patricia M. Ronning, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 21, 1977, Ser. No. 844,214
Int. Cl.[2] A01G *27/00*
U.S. Cl. 47—48.5 **10 Claims**

1. A device for delivering nutrient to a plant, said device having a variable flux capability and comprising:
a water-impermeable housing which has an inner chamber;
an opening in said housing communicating with said chamber; and
a water-permeable, substantially nondegradable membrane covering said opening, which membrane delivers the quantity of nutrient required by said plant upon demand thereby; wherein said membrane has a conditioned flux capability in the range of about 0.005 to 10 cubic centimeters per minute per square centimeter at an applied hydrostatic pressure of about 1 atmosphere, and an exaltation of said conditioned flux capability in the range of about 30% to 10,000%.

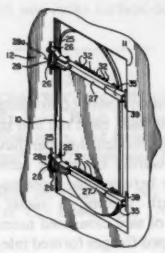


4,207,706

LATCH CONTROL FOR EXPLOSION RELIEF PANEL

Eugene F. Haines, 62 Asbury Ave., Ocean Grove, N.J. 07756

Filed Dec. 5, 1978, Ser. No. 966,613
Int. Cl.[2] E05C *15/02*
U.S. Cl. 49—141 **12 Claims**



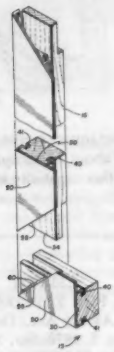
1. Apparatus for relief of excess pressure from an enclosure which comprises
a closure panel having an inner face for application of pressure thereagainst,
a frame on the enclosure for reception of the panel,
at least one arm movably mounted at one end on the frame and extending across the panel and on which said panel is mounted in sealing relation to said frame,
said panel being capable of limited linear movement with respect to the arm upon application of pressure to the inner face of the panel,
resilient members interposed between said panel and said arm,
releasable means at the other end of said arm for retaining said arm with said panel in said frame,
said releasable means at the other end of said arm including a pivotally mounted fork for retaining said arm with said panel in sealing relation to said frame,
magnetic means including a magnet and a keeper for retaining said fork in position, and
a member carried by said panel for disengaging said magnetic means upon predetermined outward movement of said panel with respect to said arm.

4,207,707

METAL CLADDED WINDOW PRODUCTS

Joseph W. Holdiman, Dubuque, and Douglas E. Justice, Cedar Falls, both of Iowa, assignors to Lancer Corporation, Dubuque, Iowa

Filed Jul. 17, 1978, Ser. No. 925,162
Int. Cl.[2] E06B 3/00
U.S. Cl. 49—501 7 Claims



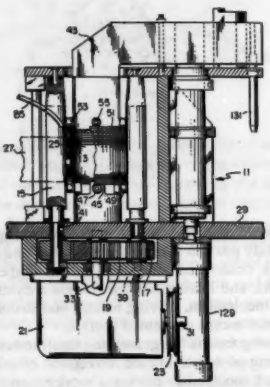
1. A metal clad window sash comprising: a plurality of rails and stiles forming the sash, each rail and stile being formed by an elongated milled wooden member having front and rear surfaces and an outwardly extending rabbet located on each side of said member between the front and rear surfaces and extending the length thereof; a metal cladding member mounted onto each of said elongated members by means of a pair of spaced L-shaped flanges formed integral therewith with the free arm of said flange being of a substantial length so as to be fitable into said rabbets on said members only by being slid therein, thereby positioning said cladding member in full contact with the milled front surface of said wooden member over the extent of the width and the length of said member, said cladding member having an extension to the internal side of said flanges; the ends of said elongated members forming the rails and stiles having mortises and tenons selectively such that the members overlap and fit together at the ends to form stiles and rails of the sash, said metal cladding member having mitered ends which fit together in a mitered butt joint; stop members positioned on one side of each of the members forming the stiles and rails and spaced from and being parallel to the extension of the cladding members to form a rabbet to receive a glazing panel assembly; and sealing material positioned on said wooden members beneath the mitered joint of the cladding members and sealed thereto; the rabbets on the outer edge of said sash having a cross-sectional width greater than the thickness of the engaged end of the L-shaped flange of the mtal cladding member fitting therein to provide a loose fit of the cladding member on the elongated member to permit movement between the rails and stiles and said cladding member in the direction of the plane of the front surface of said wooden member.

4,207,708

PISTON RING HONING

Robert H. Gillette, Angola, Ind., assignor to Brammall, Inc., Angola, Ind.

Continuation of Ser. No. 741,501, Nov. 12, 1976, abandoned.
This application Feb. 24, 1978, Ser. No. 880,810
Int. Cl.[2] B24B 5/00
U.S. Cl. 51—67 11 Claims



1. A machine for finishing a surface of a plurality of cylindrical stacked piston rings comprising:

a plurality of generally parallel axially extending cylindrical rollers, each rotatable about its axis, and positioned to engage the outer surfaces of said stacked piston rings;

means for driving at least one of the rollers to rotate about its respective axis;

a first surface treating honing tool;

first means movably supporting the first tool for movement in a first direction radially of said rings between an adjacent pair of rollers to engage the tool and said stacked piston rings and said first means also supporting said first tool to reciprocate it parallel to said rollers on the surfaces of said piston rings;

a second surface treating honing tool; and

second means movably supporting the second tool for movement in a second direction radially of said rings between a second adjacent pair of rollers to engage the second tool and said stacked piston rings and said second means also supporting said second tool to reciprocate it parallel to said rollers on the surface of said stacked piston rings, whereby driving the at least one roller induces movement of said stacked piston rings relative to the first and second engaging tools to hone the surface of said stacked piston rings and said first and second means, respectively supporting said first and second tools for reciprocating motion relative to stacked piston rings such that the reciprocating motions are independent of each other so as to minimize the axial force exerted on said stacked rings by said first and second tools.

4,207,709

TOOL GRINDING MACHINE FOR PROFILE TOOLS, ESPECIALLY FOR WOOD AND PLASTIC WORKING MACHINES

Otto Betzler, Tauberbischofsheim, and Adalbert Künzig, Königheim-Pülfringen, both of Fed. Rep. of Germany, assignors to Michael Weinig Kommanditgesellschaft, Tauberbischofsheim, Fed. Rep. of Germany

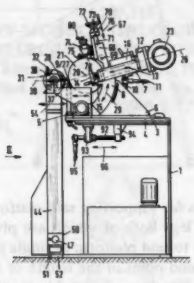
Filed May 18, 1978, Ser. No. 907,400

Claims priority, application Fed. Rep. of Germany, May 18, 1977, 2722523

The portion of the term of this patent subsequent to May 31, 1994, has been disclaimed.

Int. Cl.[2] B24B *3/08*

U.S. Cl. 51—100 R 11 Claims



1. A tool grinding machine for profile tools, especially for wood working and plastic material working machines, which includes in combination: a machine stand, at least one headstock arranged on said machine stand and comprising a grinding spindle and a grinding wheel thereon, a holding fixture provided for the profile tools to be ground and located opposite to a grinding area provided at a point of the rotational path of the grinding wheel, a copying attachment comprising a template to be arranged on a holder and also comprising a feeler arranged on said machine stand for engaging said template, a swivel support carrying said at least one headstock and being adjustable about a swivel axis at least nearly parallel to said grinding spindle and passing at least approximately through the grinding area of said grinding wheel, a pivot extending transverse to the common axial plane of said grinding spindle and said swivel axis, a rotary support supporting said swivel support and being arranged on said machine stand so as to be adjustable about said pivot, a carrier supporting said holding fixture and being pivotally mounted on said machine stand, said template being located in a plane passing through said grinding area and incorporating the edge of the profile tool to be ground, said grinding wheel being so mounted as to be adapted to be swivelled about an axis extending at least approximately at right angles to the spindle axis and inclined to the axis of rotation and passes through said grinding area, said carrier for the holding fixture being mounted on said machine stand so as to be displaceable approximately parallel to the axial direction of said grinding spindle, said grinding unit and said dressing device being mounted on said machine stand so that they can be displaced approximately vertically to the direction of displacement of said carrier for the holding fixture.

4,207,710

WORKPIECE POSITIONING APPARATUS

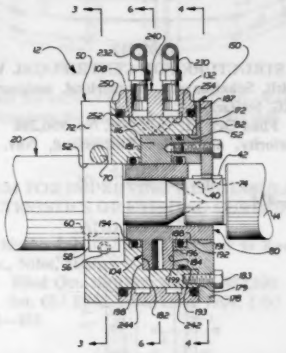
Roger H. Fournier, Millbury, Mass., assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Sep. 11, 1978, Ser. No. 941,018

Int. Cl.[2] B24B *5/02*

U.S. Cl. 51—237 CS 20 Claims

1. An apparatus for positioning a workpiece in a predetermined angular relationship with a rotatable drive spindle, said apparatus comprising connector means for connecting at least a portion of said apparatus with the drive spindle for rotation therewith, an index surface disposed in a predetermined angular position relative to the drive spindle, drive surface means for engaging the workpiece and moving a locating surface on the workpiece relative to said drive spindle from a position spaced from said index surface into abutting engagement therewith, means for supporting said drive surface means for move-



ment relative to the drive spindle and index surface along a circular path coaxial with the axis of rotation of the drive spindle, and motor means for moving said drive surface means relative to said drive spindle and index surface along the circular path and for pressing the locating surface on the workpiece against said index surface to hold the locating surface in abutting engagement with said index surface during rotation of the drive spindle.

4,207,711

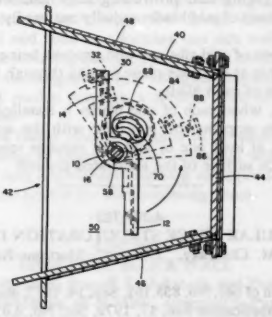
AIRLESS CENTRIFUGAL BLAST DEVICE

Raymond M. Leliaert, South Bend; Richard C. Kanouse; Bill J. Butler, both of Mishawaka, and Robert N. Linder, Granger, all of Ind., assignors to Wheelabrator-Frye Inc., Hampton, N.H.

Filed May 26, 1978, Ser. No. 909,770

Int. Cl.[2] B24C *3/02, 7/00*

U.S. Cl. 51—432 15 Claims



1. A device for airless blast with particulate media comprising wheel blades, means for feeding particulate media by gravitational flow to the inner end portions of the wheel blades for engagement by the blades during rotational movement of the wheel at high speed whereby the engaged particulate media is projected from the ends of the blades comprising a tubular member having an inlet opening at the top and a discharge

opening at the bottom, aligned with the inner end portion of the blades, at a level which just clears the upper edge of the blades, with the tubular member decreasing in cross section from the inlet at the top to the discharge opening at the bottom end in which the discharge opening has a lengthwise dimension in the direction of rotation of the wheel greater than the crosswise dimension whereby the time of flow of media onto the face of the blades is increased thereby to increase the length of the coverage of the material thrown from the outer ends of the blades.

4,207,712

BLADE STRUCTURE FOR CENTRIFUGAL WHEEL

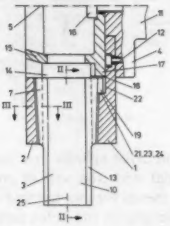
Sergej Toedtli, Schaffhausen, Switzerland, assignor to Georg Fischer AG, Switzerland

Filed Oct. 31, 1978, Ser. No. 956,288

Claims priority, application Switzerland, Nov. 17, 1977, 14039/77

Int. Cl.² B24C *5/06*

U.S. Cl. 51—434 **10 Claims**



1. A centrifugal blasting wheel comprising

first and second discs having uniformly distributed, radially extending grooves in inwardly facing surfaces thereof; spacer means for maintaining said discs in substantially parallel spaced relationship; and

a plurality of replaceable blades insertable in said grooves, each of said blades comprising an elongated body having a disc-engaging end portion and a portion protruding beyond the periphery of said discs, each of said disc-engaging end portions having

a plurality of longitudinally extending ribs, and

a laterally protruding stop member fixedly attached thereto;

stop means in at least one of said discs adjacent its grooves for engaging said protruding stop members to prevent movement of said blades radially outwardly of the wheel; and

at least one of said ribs and said grooves being formed with a taper in at least one plane passing through the longitudinal axis of each blade;

whereby, when each of said blades is installed in a groove with its stop member engaged with the associated stop means, at least one of said ribs remains spaced from the adjacent surface of the associated groove.

4,207,713

MODULAR SPACE STRUCTURATION DEVICE

Catherine M. Chatenay, "L'Etang", Martigne-Briand, France (49340)

Continuation of Ser. No. 833,161, Sep. 14, 1977, abandoned. This application Jan. 17, 1979, Ser. No. 4,074

Claims priority, application France, Oct. 1, 1976, 76 29515

Int. Cl.² E04H *3/12*

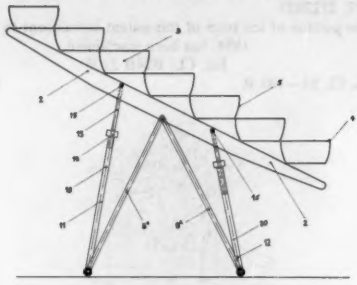
U.S. Cl. 52—9 **10 Claims**

1. A modular space structuration device comprising:

a platform including a generally rectangular frame formed of two spaced elongated parallel support members interconnected by at least two spaced cross-pieces,

a plurality of elongated tubs transversely arranged in side-by-side relationship on and supported by said support members, each of said tubs having a substantially flat upper surface and a truncated hemi-cylindrical cross-section,

said tubs being rotatable relative to said frame, from a position in which said upper surfaces form a continuous flat surface to a position in which said tubs form a plurality of tiers projecting from said frame;



at least one compass for supporting said platform, said compass having two legs both of which are pivoted at their upper extremities to said platform at single point which is substantially the mid-point of the length of said platform;

a plurality of strut members of variable length, each strut member being pivoted at one of its ends to said platform and at its other end to the lower end of a leg of said compass, and

means for varying the length of said strut members.

4,207,714

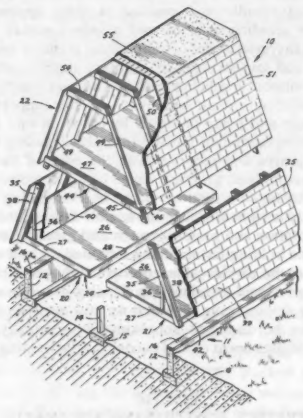
BUILDING CONSTRUCTION

William L. Mehls, 44 E. Elm St., Chippewa Falls, Wis. 54729

Filed Dec. 22, 1978, Ser. No. 972,452

Int. Cl.² E04B *1/348*

U.S. Cl. 52—79.9 **5 Claims**



1. A building construction for A-frame buildings adapted to be built in a central manufacturing facility and transported to a lot site for final assembly,

(a) a pair of complementary bottom building sections adapted to be arranged in side by side relation to form the lower portion of the building,

(b) each of said bottom sections having a horizontal floor and an outer side wall,

(c) said outer side walls angling upwardly at an acute angle to the floor wherby said side walls will converge toward each other in their upward extension when the sections are side by side,

(d) a top section of generally triangular configuration,

(e) means for mounting the top section in centered position over said bottom sections, and

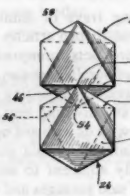
(f) said top section having outer side walls which converge in their upward extension and are respectively in planar alignment with the outer side walls of the bottom sections to form continuous outer walls therewith.

4,207,715

TENSEGRITY MODULE STRUCTURE AND METHOD OF INTERCONNECTING THE MODULES

Christopher J. Kitrick, 3500 Market St., Philadelphia, Pa. 19104

Filed Sep. 14, 1978, Ser. No. 942,301
Int. Cl.² E04B 1/32
U.S. Cl. 52—81 **7 Claims**



1. A tensegrity structure comprising a plurality of interconnected octahedral tensegrity modules:

each octahedral module including three columnlike compression members and twelve tension elements extending between the respective ends thereof, said tension elements defining the twelve edges of an octahedral geometric figure having eight triangular faces, the tension elements intersecting at the respective vertices of said octahedral geometric figure,

each octahedral module being interconnected with another octahedral module with portions of their respective triangular faces abutting each other,

but with such abutting triangular faces being relatively rotated 180° away from superposition with respect to each other,

a vertex of each abutting triangular face being joined to the midpoint of an edge of the abutted triangular face,

said structure having a surface with one triangular face of each of said octahedral modules lying in said surface, and

said surface having the appearance of an array of triangles interlaced with three-sided tetrahedral-shaped dimples.

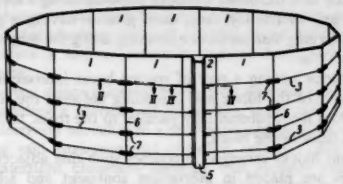
4,207,716

RECEPTACLE HAVING A CIRCUMFERENTIALLY PRE-STRESSED PERIPHERAL WALL COMPOSED OF CONCRETE SLABS

Soren J. Moldrup, Lyngby, Denmark, assignor to A/S Dansk Spaendbeton, Denmark

Filed Sep. 5, 1978, Ser. No. 939,696
Claims priority, application Denmark, Sep. 14, 1977, 4077/77
Int. Cl.² E04H 7/20, 7/22
U.S. Cl. 52—224 **6 Claims**

1. A receptacle having a circumferentially pre-stressed peripheral wall composed of a plurality of concrete slabs, the circumferential pre-stressing being established by means of wires extending around the external surface of the wall, said concrete slabs each having a plain protuberance-free external surface and, adjacent their vertical joint edges, a groove-



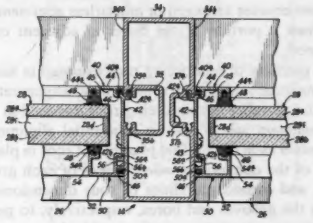
shaped recess for each of the wires, the depth of said recesses increasing towards the marginal edges of the slab.

4,207,717

SYSTEM FOR IMPROVING HEAT INSULATING CHARACTERISTICS OF EXISTING CURTAIN WALLS AND THE LIKE

S. Eugene Hubbard, Niles, Mich., assignor to Kawneer Company, Inc., Niles, Mich.

Filed Oct. 18, 1978, Ser. No. 952,300
Int. Cl.² E04B 2/28; E04C 1/04, 1/07
U.S. Cl. 52—235 **40 Claims**



1. A system for the conversion of an existing wall structure into an insulated panel wall structure, said existing wall structure including a panel to be removed and a panel edge supporting frame having a pocket in a jamb face; said system comprising:

an elongated stop element having a base adapted to be secured to said jamb face extending into said pocket after removal of said existing panel therefrom;

said stop element including a first flange extending outwardly of said jamb face forming one side wall of a new pocket for receiving an edge portion of an insulating panel and a second flange extending along said jamb face closing over said pocket forming a bottom wall of said new pocket; and

an elongated flange element adapted to be secured on said second flange in spaced parallel alignment with said first flange of said stop element forming an opposite side wall of said new pocket for said insulating panel.

4,207,718

CONCRETE BLOCK WALL

Cecil Schaaf, Standish; Russell J. McIntosh, and David C. Morton, both of Flushing, all of Mich., assignors to Paul A. Kakuris, Chicago, Ill.

Continuation of Ser. No. 906,106, May 15, 1978, abandoned. This application Mar. 8, 1979, Ser. No. 18,717
Int. Cl.² E04C 1/08, 1/10
U.S. Cl. 52—585 **1 Claim**

1. An assembly of building blocks comprising:

a plurality of blocks, each block including a rectangular body having substantially parallel top and bottom faces,

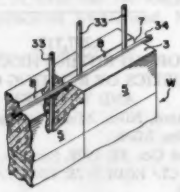
substantially parallel front and back faces, and substantially parallel right and left end faces;

each of said faces being substantially planar;

each top face including a groove disposed along a longitudinal axis of the top face, each groove having a pair of converging side surfaces extending along the longitudinal axis;

each block having a pair of spaced bores intersecting the groove of the block and extending between the top and bottom faces substantially parallel to the front, back, and end faces of the block;

adjacent blocks arranged in courses such that adjacent end faces are placed in mortarless abutment and adjacent grooves are substantially aligned;



adjacent courses arranged in mortarless abutment such that at least a portion of the bores in adjacent courses are aligned;

a first plurality of reinforcing rods disposed in said grooves to maintain said blocks in substantial alignment;

a second plurality of reinforcing rods disposed in said bores to maintain said blocks in substantial alignment and to maintain each of said first plurality of rods in place against one of the converging side surfaces of each groove, said first and second pluralities of rods dimensioned smaller than the grooves and bores, respectively, to permit relative movement between adjacent blocks.

4,207,719

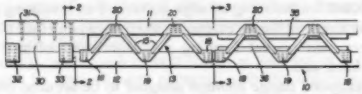
COMPOSITE CONSTRUCTION BEAM

James Knowles, 1275 Club Dr., Bloomfield Hills, Mich. 48013

Filed Apr. 3, 1978, Ser. No. 893,317

Int. Cl.[2] E04C *3/292*

U.S. Cl. 52—693 **14 Claims**



1. A strut for interconnecting a pair of horizontally elongated, vertically spaced apart wood chords having substantially vertical side faces, comprising:

an elongated sheet metal channel having its elongated base arranged upright and its legs formed to extend inwardly of the base, between the chords;

with said legs gradually increasing in depth, so that the channel gradually increases in depth along its length direction, from the bottom towards the top of the channel;

and each of the opposite ends of the channel base being extended into substantially flat, roughly vertically arranged, enlarged connector plates adapted for face to face engagement with aligned portions of the chord side faces, with said plates each having numerous struck-out teeth for embedding into their adjacent chord portions.

4,207,720

APPARATUS FOR FILLING CHARGERS WITH CIGARETTES OR THE LIKE

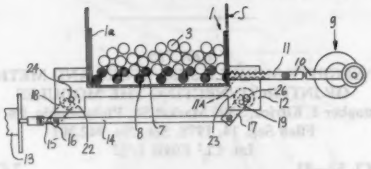
Gerhard Tolasch, Wentorf; Bernhard Schubert, Neubörnsen, and Günter Menge, Hamburg, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co., KG., Hamburg, Fed. Rep. of Germany

Filed Feb. 23, 1978, Ser. No. 880,575

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1977, 2709700

Int. Cl.[2] B65B *19/04*

U.S. Cl. 53—151 **21 Claims**



1. Apparatus for filling trays or similar containers with cigarettes or analogous rod-shaped articles which constitute or form part of smokers' products, comprising a magazine arranged to store a supply of parallel articles and having a lower end portion defining an article-discharging opening; a plurality of partitions disposed in and dividing said opening into a plurality of passages for sidewise downward movement of articles in a direction from the interior of said magazine into a container which is outwardly adjacent to said opening; closing members, one for each of said passages and each movable from an inoperative position above one of said partitions, as considered in said direction, to an intercepting position to thereby prevent the evacuation of articles by way of the respective passage, said closing members including elongated parallel rods; means for rotating said closing members, at least in said inoperative positions of said closing members; and means for moving said closing members between said inoperative and intercepting positions to thereby respectively permit and interrupt the evacuation of articles from said magazine, each of said closing members having a component of movement in the direction of downward movement of articles during movement of said closing members to said intercepting positions thereof.

4,207,721

FINGER ASSEMBLY FOR CASE LOADER

John L. Raudat, North Madison, Conn., and Adam Z. Rydell, Decatur, Ga., assignors to Standard-Knapp, Inc., Portland, Conn.

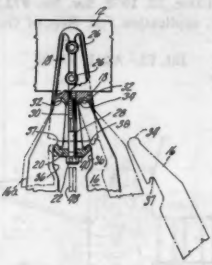
Filed Nov. 24, 1978, Ser. No. 963,363

Int. Cl.[2] B65B *21/16*

U.S. Cl. 53—248 **11 Claims**

1. A finger assembly for a case loader and comprising a vertically elongated finger holder having at least one vertically disposed finger receiving slot, said one slot having a blind upper end portion defining a generally downwardly facing clamping surface, said one slot opening laterally outwardly through a side of said holder and downwardly through the lower end of said holder, at least one flexible finger, said one finger received in said one slot and having an end portion received in said blind portion and another portion exposed below and in closely spaced relation to said lower end and defining a generally upwardly facing clamping surface engaging said other portion, a single clamping fastener extending upwardly through said retaining member and engaging said holder, said clamping fastener being movable relative to said holder between clamping and releasing positions, said clamping fastener in its clamping position maintaining said upwardly facing clamping surface and said downwardly facing clamping

surface is generally opposing clamping emgagement with sais one finger to releasably retain said one finger in assembly with said holder, said one finger in its clamped condition extending downwardly and outwardly from said holder, said one finger



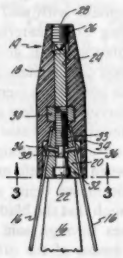
being freely movable out of said slot and out of assembly with said holder when said clamping fastener is in its releasing position and means for adjustably mounting said holder on an associated part of a case loader.

4,207,722

FINGER ASSEMBLY FOR CASE LOADER

John L. Raudat, North Madison, Conn., assignor to Standard-Knapp, Inc., Portland, Conn.

Filed Nov. 24, 1978, Ser. No. 963,361
Int. Cl.[2] B65B *21/16*
U.S. Cl. 53—248 **11 Claims**



1. A finger assembly for a case loader comprising a finger holder, means for adjustably mounting said finger holder in depending position on a part of the loader, a finger retaining member, a single fastener extending upwardly through said retaining member and engaged with a lower portion of said finger holder, said finger holder and said retainin member having opposing clamping surfaces thereon, and at least one flexible finger having an upper portion disposed between and releasably retained by said clamping surfaces, said finger in its clamped position extending downwardly and outwardly from said finger holder.

4,207,723

CANNING AND INSPECTION SYSTEM FOR NUCLEAR REACTOR FUEL AND REFLECTOR ELEMENTS

Basil C. Hawke, Solana Beach, and Lewis A. Goldman, Cardiff, both of Calif., assignors to General Atomic Company, San Diego, Calif.

Filed Jun. 14, 1978, Ser. No. 915,365
Int. Cl.[2] G21C *19/20*
U.S. Cl. 53—281 **15 Claims**

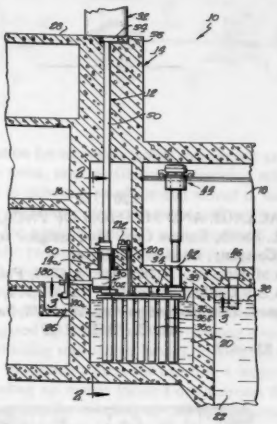
1. A system for handling and canning nuclear reactor fuel and reflector elements, comprising, in combination,

housing means defining at least one shielded chamber,

a generally upstanding transfer chute supported by said housing means and adapted to receive a fuel or reflector element therein from a transfer cask,

an environmental chamber having communication with said shielded chamber and said transfer chute and adapted to receive a fuel or reflector element from said transfer chute,

conveyor means disposed within said shielded chamber and including a plurality of upstanding watertight chambers selectively movable to a predetermined position underlying said environmental chamber, selected ones of said watertight chambers defining fuel element receptacles each of which is adapted to receive a fuel or reflector element therein and has a releasable cover lid operative to effect sealed relation with its corresponding receptacle,



said environmental chamber having an access opening overlying said conveyor means so as to be substantially axially aligned with each of said conveyor chambers when moved to said predetermined position,

and grapple means disposed within said environmental chamber and adapted for movement through said access opening to remove a cover lid from a receptacle disposed in said predetermined position and move said cover lid to a position within said environmental chamber facilitating entry of a fuel or reflector element into said receptacle through said access opening,

said conveyor means being adapted to convey receptacles having fuel or refector elements therein from said predetermined position to a position facilitating movement of the fuel elements to a storage area.

4,207,724

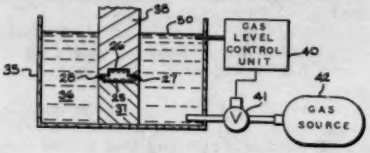
METHOD OF MAKING PULSATION BAG

John F. Combest, Findlay, Ohio, assignor to R. L. Kuss and Company, Findlay, Ohio

Filed May 23, 1978, Ser. No. 908,673
Int. Cl.[2] B65B *31/02*
U.S. Cl. 53—403 **5 Claims**

5. A method of manufacturing gas-containing plastic pulse bags comprising two opposing flexible membranes peripherally sealed along their opposing sides, at least one of which opposing sides being recessed and forming an internal pocket for enclosing a gas having a density greater than air, including the steps of providing a chamber continuously filled with such gas and having an open top, eliminating trapped air adjacent said membranes by slopingly inserting said two plastic membranes into said chamber such that said recessed opposing sides pass obliquely through an upper surface of such gas and face

away from said open-top chamber, orienting said membranes in an opposing relationship, and peripherally sealing said membranes within said open-top chamber to seal a quantity of said gas within said pocket.



4,207,725

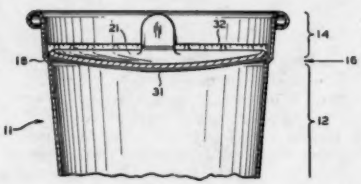
PACKAGE AND METHOD OF PACKAGE USE

Ernest L. Smith, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 674,185, Apr. 6, 1976, Pat. No. 4,127,187, which is a continuation of Ser. No. 475,979, Jun. 5, 1974, abandoned. This application Aug. 28, 1978, Ser. No. 937,666

Int. Cl.[2] B65B *7/28*

U.S. Cl. 53—471 **7 Claims**



1. A method of handling a product material, said method comprising sequentially:

inserting said product material into the lower portion of a container;

placing a rupturable sealing partition across said container at an intermediate portion of said container, said intermediate portion being located above said lower portion containing said product material, said rupturable sealing partition separating the lower product containing portion of said container from an upper measuring portion of said container;

adhesively bonding rupturable sealing partition to the inside wall of said container;

inserting a closure member into said container to a position above said rupturable sealing partition to protect said rupturable sealing partition until said product material is to be used;

removing said closure member when said product material to be used;

filling a portion of said measuring portion of said container located above said rupturable sealing partition with a desired amount of a liquid; and

rupturing said sealing partition to permit said liquid to enter said lower portion of said container.

4,207,726

HARVESTING IMPLEMENT

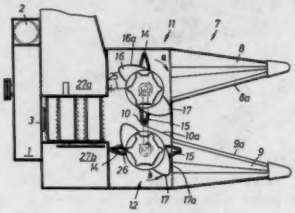
Wilhelm Lippl, Ichenhausen-Oxenbronn, Fed. Rep. of Germany, assignor to Karl Mengele & Söhne Maschinenfabrik & Eisengiesserei GmbH & Co, Günzburg, Fed. Rep. of Germany

Filed Dec. 22, 1978, Ser. No. 972,222

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2758098

Int. Cl.[2] A01D *45/02*

U.S. Cl. 56—13.9 **9 Claims**



1. A harvesting implement particularly for harvesting corn stalks comprising: a pair of upright counterrotating conveying rollers defining therebetween a cutting station at which harvested material is cut by rotation of said conveying rollers; stalk guide means including stalk dividers extending forwardly of said conveying rollers to guide incoming crop material to be harvested to said cutting station between said conveying rollers; knife means extending radially from each of said conveying rollers and arranged to pass alternately through said cutting station; stationary means arranged at said cutting station for cooperative engagement with said knife means to effect cutting of said incoming crop material; a plurality of feed rollers arranged for rotation about generally horizontal axes located rearwardly of said cutting station for receiving said cut crop material therefrom; conveying members extending axially upwardly along said conveying rollers above said knife means to convey cut crop material toward said feed rollers; and blade means located on each of said conveying rollers and extending radially therefrom between said knife means and said conveying members, said blade means being angularly arranged on said conveying rollers such that the blade means on one of said conveying rollers passes through said cutting station alternately with the blade means of the other of said conveying rollers in a uniform periodic relationship.

4,207,727

HARVESTING DEVICE

Roderick J. Poytress, 6696 S. West Ave., Fresno, Calif. 93706

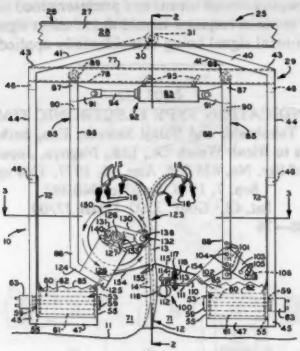
Filed Apr. 28, 1978, Ser. No. 900,876

Int. Cl.[2] A01D *46/00*

U.S. Cl. 56—330 **19 Claims**

1. A harvesting device for a mobile harvester adapted for movement along a row of crop bearing plants, the harvesting device comprising an elongated assembly defining an axis of rotation extending longitudinally thereof; a substantially cylindrical member borne by the assembly and having a longitudinal axis substantially parallel to said axis of rotation and spaced therefrom; a counterweight secured on the assembly adjacent to the axis of rotation on a side thereof remote from said longitudinal axis of the member; means mounting the assembly on the harvester for rotation about the axis of rotation thereof with said axis of rotation substantially parallel and adjacent to

the plants during said movement of the harvester along the row; and means for rotating the assembly about the axis of



rotation to carry said member in a path of movement against the plants to impart crop dislodging motion thereto.

4,207,728

EQUIPMENT FOR PNEUMATIC MANUFACTURE OF YARN

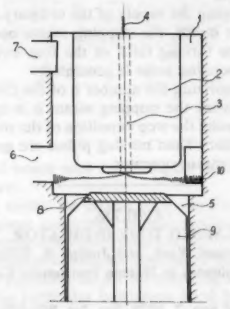
Jerzy Ostrowski; Piotr Sierputowski, both of Warsaw; Lukasz Turkowski, Sulejowek-Ratajewo; Jerzy Jablkiewicz; Jan Pacholski, both of Lodz, and Tadeusz Jedryka, Warsaw, all of Poland, assignors to Centralny Osrodek Badawczo-Rozwojowy Maszyn Wlokienniczych, Lodz, Poland

Continuation of Ser. No. 773,541, Mar. 2, 1977, abandoned. This application Mar. 29, 1978, Ser. No. 891,488

Claims priority, application Poland, Mar. 10, 1976, 187854

Int. Cl.[2] D01H *1/12*

U.S. Cl. 57—58.89 **1 Claim**



1. An apparatus for pneumatic manufacture of yarn, comprising: a stationary cylindrical non-rotational spinning chamber, said chamber being closed with a separator at one end; said separator having a yarn discharge channel and, communicating at its other end with a vacuum source; peripheral ducts for supplying air; a fibre delivery channel (7) at the periphery of said chamber; cylindrical insert means formed of a cylindrical element (8) located inside the spinning chamber (1) beneath a zone where a ring (10) of whirling fibres is formed and being adapted to restrict swirling air flow; air guides (9) disposed in the chamber (1) outlet beneath the said element (8), said air guides (9) being adapted to alter air flows in an axial direction.

4,207,729

METHOD AND APPARATUS FOR COATING TEXTILE STRANDS OR THREADS FOR USE IN HOISERY OR WEAVING

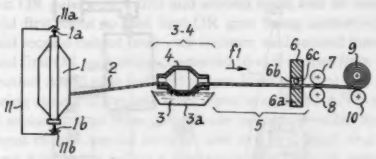
Pierre E. Exbrayat, and Richard A. Schutz, both of Mulhouse, France, assignors to Agence Nationale de Valorization de la Recherche (ANVAR) and Agence Nationale de Valorisation de la Recherche (A.N.V.A.R.), both of RX

Filed May 26, 1976, Ser. No. 690,020

Claims priority, application France, May 27, 1975, 75 16503

Int. Cl.[2] D01H *13/30*

U.S. Cl. 57—296 **10 Claims**



1. An installation for treating a textile strand such as sliver or roving with no twist, said installation comprising strand storing means able to deliver a textile strand stored in said strand storing means, means located downstream from said strand storing means for applying molten wax onto said delivered strand, a first false twisting device for imparting a false twist to said strand and a second false twisting device located downstream from said first false twisting device, said second false twisting device being arranged to give said strand a false twist which is propagated up to said first false twisting device, cooling means for cooling said strand having molten wax applied thereon, a pair of tension rollers for exerting a tension on the strand and winding up means located downstream from said pair of tension rollers for winding up the treated strand.

10. A method of treating a textile strand such as a roving or a sliver with no twist in order to render it able to undergo knitting or weaving, said method comprising, in order, the steps of:

subjecting temporarily said strand to false twist; coating said strand in its false twisted state at least at regular intervals therealong with a wax in molten state by intermittent immersion in a wax bath of lengths of strand so that lengths of immersed strand alternate with lengths of strand not immersed in said wax bath, said coating step and said step of subjecting temporarily said strand to false twist being combined with one another;

cooling said coated strand while maintaining it in a false twisted state; and

winding said strand on bobbin means.

4,207,730

PROCESS AND APPARATUS FOR BULKING TEXTILE YARNS

Rainer Lorenz, Nettetal-Breyell, Fed. Rep. of Germany, assignor to Palitex Project Company GmbH, Krefeld, Fed. Rep. of Germany

Filed Dec. 26, 1978, Ser. No. 973,248

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2759022

Int. Cl.[2] D02G *1/18*

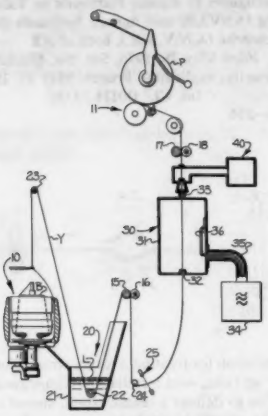
U.S. Cl. 57—351 **17 Claims**

1. In a process for bulking, more particularly high-bulking, of textile yarn having fibers of different shrinkage characteristics including the step of temporarily heating the yarn sufficiently to obtain differential shrinkage and thus bulking of the yarn; the improvement of:

soaking the yarn with water and/or other liquid having dielectric properties similar to water while fully and

evenly saturating the yarn throughout with a predetermined amount of such liquid; and

applying microwave energy to the saturated yarn for said heating of the yarn;



whereby, said heating is uniformly applied throughout the yarn and an energy savings can be realized over conventional yarn bulking processes.

4,207,731

ELECTRONIC TIMEPIECE CONTROL CIRCUIT

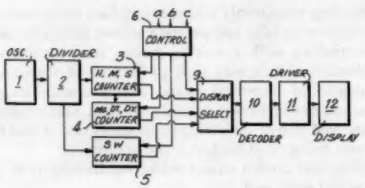
Hidehiko Seki, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Nov. 18, 1977, Ser. No. 852,872

Claims priority, application Japan, Nov. 18, 1976, 51-138784

Int. Cl.[2] G04B *19/24*; G04C *3/00*; G04B *27/00*

U.S. Cl. 368—29 **9 Claims**



1. In an electronic timepiece including timekeeping circuit means having a plurality of timekeeping counters each respectively producing timekeeping signals representative of actual time, said timekeeping circuit means being adapted to be disposed in at least three timekeeping functional modes for performing at least one timekeeping function in each said mode, a first said timekeeping functional mode being a correction mode for permitting the count of at least two of said timekeeping counters to be adjusted, the adjustment of said at least two timekeeping counters being avoided when said timekeeping circuit means is disposed in other than said first functional mode, the improvement comprising control means for producing a functional mode select signal and a function control signal, said function control signal being adapted, when applied to said timekeeping circuit means, to functionally control said timekeeping circuit means without selecting another of said timekeeping functional modes, mode select coupled to said timekeeping circuit means for cyclically selecting in sequence each timekeeping functional mode of said timekeeping circuit means in response to each mode select signal being applied thereto, and judgment means, adapted to receive each said mode select signal and function control signal, for returning said timekeeping circuit means to a predetermined timekeeping functional mode in response to said mode select signal and said function control signal being coincidentally applied thereto.

4,207,732

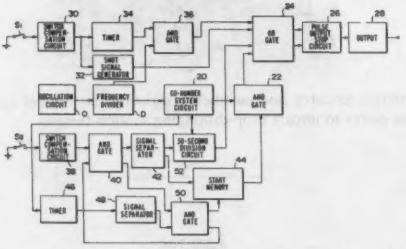
HAND-INDICATION TYPE ELECTRONIC TIMEPIECE

Shigekazu Takahashi, and Shinji Sawada, Ena, both of Japan, assignors to Ricoh Watch Co., Ltd., Nagoya, Japan

Division of Ser. No. 825,084, Aug. 16, 1977. This application Sep. 7, 1978, Ser. No. 940,382

Int. Cl.[2] G04C *3/00*; G04B *27/00*

U.S. Cl. 368—76 **1 Claim**



1. An hand-indication type electronic timepiece having a quartz crystal vibrator, a frequency divider, an analog time display including hands, a motor for moving the hands and means for generating a series of ordinary hand moving pulses to drive the motor, the timepiece comprising:

a first switch;

means for generating a hand sending pulse at each time when the first switch is operated;

means for generating a quick hand sending pulse while the first switch is closed in response to the closure of the first switch over a determined time interval;

a second switch;

means for stopping the supply of the ordinary hand moving pulses to the motor, the stopping means operating in response to the turning OFF of the first switch after the quick hand sending pulse is generated;

means for memorizing the number n of the ONs of the second switch while the stopping means is in operation; and

means for releasing the stop condition of the stopping means when n ordinary hand moving pulses are generated after the stopping means operates.

4,207,733

ELAPSED TIME INDICATOR

Leonard H. Copeland, York, and Joseph B. Wible, Lancaster, both of Pa., assignors to Datcon Instrument Company, East Petersburg, Pa.

Filed Sep. 7, 1978, Ser. No. 940,479

Int. Cl.[2] G04F *8/00*; G04B *15/00*, *19/02*

U.S. Cl. 368—108 **27 Claims**

1. An inverse verge escapement system for use in an elapsed time indicator comprising:

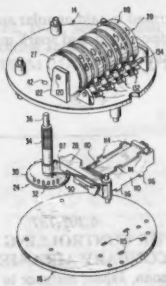
(a) a housing for holding numbered wheels for indicating elapsed time;

(b) a drive wheel rotatably held within said housing substantially in a predetermined plane and drivingly connected to said numbered wheels for rotating said numbered wheels at predetermined intervals;

(c) said drive wheel having a plurality of teeth upstanding therefrom substantially equally spaced from one another about the periphery of said drive wheel; and;

(d) a verge member oscillating between first and second

positions in a plane substantially parallel to the predetermined plane and adapted to drivingly engage one of said teeth in its movement from said first position to said second position and to drivingly engage an adjacent tooth in



its return movement from said second position to said first position for rotating said drive wheel at a predetermined rate to effect rotation of said numbered wheels at predetermined intervals.

4,207,734

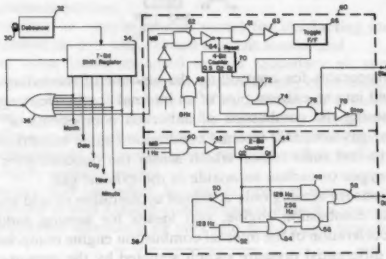
LED DIGITAL WATCH WITH USER CONTROL OF DISPLAY TIMING AND BRIGHTNESS

Norman E. Moyer, Newport Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 756,299, Jan. 3, 1977, abandoned. This application Jul. 17, 1978, Ser. No. 925,597

Int. Cl.[2] G04B *19/30*

U.S. Cl. 368—83 **2 Claims**



1. A digital watch with LED display devices comprising:
a debouncer;
a clocking circuit for producing a plurality of clock pulses;
a shift register connected to said debouncer for selecting which mode the digital watch is in;
said shift register having an input and a plurality of outputs;
brightness adjusting means for allowing the watch user to select the particular brightness level he desires for the LED display devices;
a push button, depression of said push button causing said shift register to deliver a pulse to said brightness adjusting means;
said brightness adjusting means comprising:
a first NAND gate with a first, second and third input and an output;
said first input to said first NAND gate being responsive to said push button, said second input from said first NAND gate connected to said first output from said shift register, and said third input from said NAND gate being connected to receive a first clock pulse;
said output of said first NAND gate being connected to a first inverter gate;
the output of said first inverter gate being connected to the input of a counter having an input and a first and second output;
said first output of said counter being connected to a first input to a first AND gate having a plurality of inputs and an output, said second input to said first AND gate being connected to receive a second clock pulse and said third input to said first AND gate being connected to the output of a first OR gate;
a second inverter with an input and an output;
a second AND gate with a first and second input and an output, said first input being connected to receive a third clock pulse, and said second input being connected to said output of said second inverter;
a first OR gate with a first and second input and an output, said first input to said first OR gate being connected to said second output from said counter, said second input to said first OR gate being connected to said output from said second AND gate and said output from said first OR gate being connected to said third input to said first AND gate;
said second output from said counter being connected to said input of said second inverter and to a first input to a second AND gate and to a first input to a first OR gate;
said second input to said second AND gate being connected to receive said third clock pulse;
a first NOR gate having a first and second input and an output, said first input to said first NOR gate being connected to said output of said second AND gate, said second input to said first NOR gate being connected to said output of said first AND gate and said output of said first NOR gate being connected to said display device.

4,207,735

DIAL AND MOVEMENT FIXING STRUCTURE

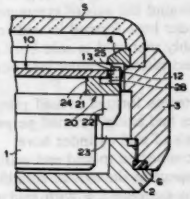
Hisao Ishigaki, Tokyo, and Ryuzo Tanaka, Tanashi, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Sep. 14, 1978, Ser. No. 942,328

Claims priority, application Japan, Sep. 19, 1977, 52-126064[U]

Int. Cl.[2] G04B *37/00, 37/04, 19/06*

U.S. Cl. 368—300 **5 Claims**



1. A dial- and movement-fixing structure having a ring for fixing a dial and a movement at predetermined positions in a watch case, wherein:
(a) said dial possesses notched portions composed of a pair of arcuate portions that are faced to each other in a direction in parallel with the outer edge of said dial;
(b) said ring is of a unitary structure made of a synthetic resin having: a plurality of projections on the upper surface at positions corresponding to each of the notched portions formed in said dial, a plurality of leg portions on the lower surface to engage with said movement, and legs that will be sandwiched between of said watch case and a back cover such that said ring is fixed at a predetermined position in said watch case;
(c) each of said projections possesses plural arcuate portions corresponding to the arcuate portions of said notched portions, and side surfaces that are connected to the inner ends of said arcuate portions and that do not come into contact with the inner surfaces of said notched portions,

the distance between the arcuate portions of said projections being slightly greater than the distance between the arcuate portions of said notched portions; and

(d) the upper surface of said ring having a groove along a base portion of said projection facilitating the insertion of the projections into the notched portions.

4,207,736

ROTARY PISTON MACHINE

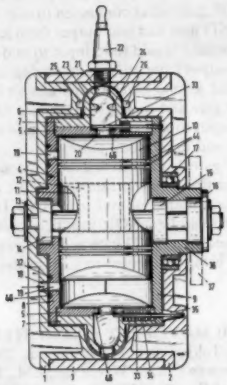
Pieter J. van Loo, Kobbe 50, Dokkum, Netherlands

Filed Feb. 14, 1978, Ser. No. 877,684

Claims priority, application Netherlands, Feb. 16, 1977, 7701627

Int. Cl.[2] F02B *53/08*; F02C *5/04*

U.S. Cl. 60—39.34 **1 Claim**



1. A rotary piston machine comprising

a housing formed by two substantially plane end walls and a substantially cylindrical intermediate wall, said walls defining a cylindrical interior space;

a disc shaped body sealingly fitting in said space and being rotatable around the axis of symmetry of said space;

a radial cylinder bore formed in said rotatable body;

a piston slidably mounted in said bore and having two end surfaces, said piston dividing said bore into two cylinder chambers;

a transverse recess formed in said piston intermediate said end surfaces and being directed perpendicular to the longitudinal axis of said cylinder bore;

crank means connected to said end walls and being laterally offset in respect to the axis of rotation of said body, said crank means cooperating with said recess so that upon rotation of said body said piston will move in said bore;

inlet port means in said housing communicating, in predetermined angular positions of said body, with said cylinder chambers and being connected with a source of combustible gas, so as to admit gas to one of said cylinder chambers during a part of the piston stroke;

a combustion space formed at each end of said bore and communicating with one of said cylinder chambers, said combustion space being defined by wall means, a part of said wall means contacting surfaces of said housing walls, and being provided with an aperture at the side directed towards the inner surface of said intermediate wall, said combustion space extending in the circumferential direction of said body;

spark means provided in said intermediate wall to ignite the combustible gas present in said combustion space when said aperture passes said spark means;

nozzle means in a transverse part of said wall means of said combustion space directed opposite to the direction of rotation of said disc shaped body, said nozle means adapted to direct a jet of combustion gases in a substantially peripheral direction is an annular space defined between said housing and the outer surface of said body, so as to cause said body to rotate in a direction opposite to the flow of said gases as a consequence of reaction forces; and

outlet ports formed in said annular space at a predetermined angular distance from said spark means in the direction of rotation of said body.

4,207,737

APPARATUS FOR CONTROLLING THE AMOUNT OF SECONDARY AIR INJECTION

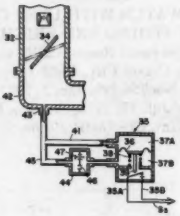
Hideo Miyagi, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 757,474, Jan. 7, 1977, abandoned. This application Oct. 19, 1978, Ser. No. 952,858

Claims priority, application Japan, Jul. 28, 1976, 51-89957

Int. Cl.[2] F01N *3/10*

U.S. Cl. 60—276 **2 Claims**



1. Apparatus for controlling the amount of secondary air injected into an exhaust pipe of an internal combustion engine for causing the combustion of unburned components of the exhaust gas from said internal combusion engine comprising:

air to fuel ratio sensor which senses the concentration of oxygen or carbon monoxide in the exhaust gas;

a means for sensing only a sudden acceleration of said internal combustion engine, said means for sensing sudden acceleration of the internal combustion engine comprising a differential pressure switch actuated by the pressure in an intake manifold of said internal combustion engine, said differential pressure switch being arranged and configured such that said differential pressure switch is actuated for some predetermined time after only a sudden acceleration of said internal combustion engine occurs;

a control means for generating a signal which is responsive to the output of said air to fuel ratio sensor and to said means for sensing only a sudden acceleration of the internal combustion engine;

a valve means for controlling the amount of secondary air injected into said exhaust pipe, said valve means being controlled by said control means such that the valve means causes the amount of secondary air injected into the exhaust pipe to increase or decrease in response to the output of the air to fuel ratio sensor and to suddenly increase the amount of secondary air injected into the exhaust system only when a sudden acceleration of the internal combustion engine is sensed by said means for sensing only a sudden acceleration;

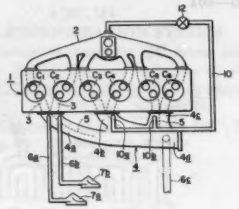
whereby the amount of secondary air injected is suddenly increased only when a sudden acceleration of the internal combustion engine is sensed.

4,207,738

EXHAUST GAS PURIFYING SYSTEM FOR MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Kenji Yoneda, Fujisawa, and Toshifumi Nishimura, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 22, 1978, Ser. No. 880,154
Claims priority, application Japan, Feb. 25, 1977, 52-22972[U]
Int. Cl.[2] F02M *25/06*; F01N *3/10*
U.S. Cl. 60—278 6 Claims



1. An exhaust gas purifying system for a multi-cylinder internal combustion engine having a plurality of combustion chambers, comprising:

exhaust conduit means for discharging of the exhaust gases from said combustion chambers, said exhaust conduit means including a plurality of exhaust port passages respectively in communication with the combustion chambers and an exhaust manifold in communication with said exhaust port passages, said exhaust manifold having a plurality of branches which lead from said exhaust port passages and merge into a common portion, said branches including a longest branch which extends over a distance longer than the other branch(es) before merging into said common portion;

secondary air supply conduit means for conducting atmospheric air into said exhaust conduit means; and

reed valve means mounted in said secondary air supply conduit means and operable to periodically open and close in response to the pulsations of the exhaust gas pressure in said exhaust gas conduit means for thereby intermittently allowing atmospheric air to flow into the exhaust gases in said exhaust gas conduit means through said secondary air supply conduit means,

wherein said secondary air supply conduit means is connected to said exhaust conduit means in such a way as to introduce secondary air only into said longest branch.

4,207,739

PROCESS AND APPARATUS FOR HARNESSING THE ENERGY OF THE SWELL

Bruno D. Scarpi, Kerventec-Penthivre, Saint-Pierre de Quiberon, Morbihan, France

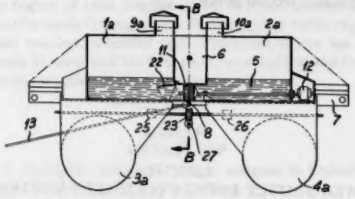
Filed Dec. 15, 1977, Ser. No. 860,693
Claims priority, application France, Dec. 22, 1976, 76 38679
Int. Cl.[2] F03B *13/12*
U.S. Cl. 60—398 19 Claims

1. An apparatus for harnessing the energy of the swell, the apparatus including:

a vessel suitable to be supported above the surface of the sea, and divided into two compartments having lower portions in fluid communication with one anotherfor receiving an auxiliary liquid;

means for translating into electrical energy the energy developed by reciprocating motion of said auxiliary liquid caused by the vessel following the natural movements of the sea, said reciprocating motion of said auxiliary liquid which is translated into electrical energy being reciprocating transfer of said auxiliary liquid between said two compartments;

said translating means comprising an electrical generator and at least two turbines enclosed in parallel passages providing said fluid communication between said lower portions of said compartments, said turbines being operatively connected to the generator and operated by auxiliary liquid during reciprocating transfer thereof in both directions; and



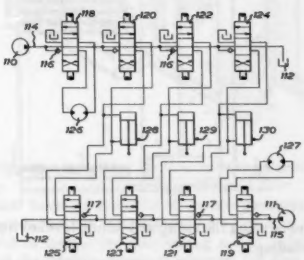
means for closing a first of said passages and opening a second of said passages during transfer of said auxiliary liquid in one direction and for opening the first of said passages and closing a second of said passages during transfer of the auxiliary liquid in the opposite direction.

4,207,740

VALVE BLOCKS, IN PARTICULAR FOR HYDRAULIC EXCAVATORS

Björn S. Ripa, Helsingborg, Sweden, assignor to Akermans Verkstad AB, Eslov, Sweden

Filed Jun. 12, 1979, Ser. No. 47,771
Int. Cl.[2] F15B *13/06*, *13/09*
U.S. Cl. 60—486 5 Claims



1. In a valve block for machines executing working movements, in particular excavators, the combination of:

(a) at least two sets of valves, which valves are of the type which, in the unactuated state, allow the passage of pressure medium;

(b) at least a first pump which is coupled to the first set of valves;

(c) at least a second pump which is coupled to the second set of valves; and

(d) hydraulic devices for executing said working movements, which hydraulic devices are each coupled to a valve in each set, the valves in the one set being coupled in series in such a manner that the valve which is coupled to the hydraulic device for executing the first working movement is located most proximal said first pump, then followed by the valve which is coupled to the hydraulic device for executing the second working movement and finally the valve which is coupled to the hydraulic device for executing the third working movement being located most distal from said first pump, and the valves in said second set being similarly coupled in series but such that the valve which is coupled to the hydraulic device for

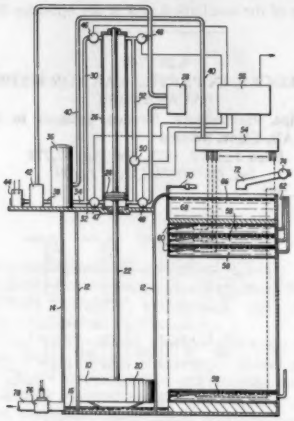
executing said third working movement is located most proximal said second pump, then followed by the valve which is coupled to the hydraulic device for executing said second working movement and finally the valve which is coupled to the hydraulic device for executing said first working movement being located most distal from said second pump.

4,207,741

POWER SOURCE USING CYCLICALLY VARIABLE LIQUID LEVEL

Don E. Rainey, 4529 NE. 21st Ave., Ft. Lauderdale, Fla. 33308

Filed Jan. 5, 1979, Ser. No. 1,369
Int. Cl.[2] F03C *1/00*
U.S. Cl. 60—496 **11 Claims**



1. A power using the rising and falling level of liquid such as water including:

A. A working tank capable of holding liquid between upper and lower liquid levels;

B. A piston having a liquid-tight hollow chamber in the working tank arranged to move vertically up and down within the tank;

C. Means for converting vertical motion of the piston into useful power;

D. Means for varying the liquid level in the tank comprising:

(a) a plurality of liquid-tight exchange receptacles adjacent the tank extending in vertically spaced relationship between the lower and upper liquid levels in the working tank, each exchange receptacle communicating with the tank through an opening including a normally closed valve;

(b) means for controlling opening and closing of said valves individually and sequentially from the uppermost to the lowermost exchange receptacle, and vice versa;

E. Means for supplying working liquid into the working tank from a source external of the working tank and separate from said exchange receptacles; and

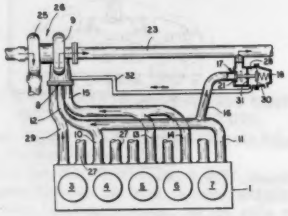
F. Means for selectively exhausting liquid from a lower region of the working tank corresponding with the lower level of liquid within the tank.

4,207,742

ENGINE WITH SHUNTABLE TURBOCHARGER

Werner Dommes, Ingolstadt; Alfre Härtl, Gaimersheim, and Hans-Werner Pölzl, Ingolstadt, all of Fed. Rep. of Germany, assignors to Audinsu Auto Union AG, Neckarsulm, Fed. Rep. of Germany

Filed Apr. 20, 1978, Ser. No. 898,416
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1977, 2717684
Int. Cl.[2] F02B *37/00*
U.S. Cl. 60—602 **9 Claims**



1. An engine system comprising:

an engine having a plurality of cylinders each having an exhaust-gas output;

an exhaust-gas turbocharger having a plurality of exhaust-gas inlets;

a plurality of exhaust-gas conduits each connecting a respective number of said exhaust-gas outputs to a respective exhaust-gas inlet;

a vent conduit connected to one of said exhaust-gas conduits;

valve means in said vent conduit for relieving pressure therein when exhaust-gas pressure exceeds a predetermined pressure level; and

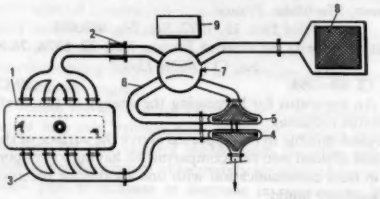
means in said one conduit for reducing the flow cross section near said exhaust-gas inlets, and thereby increasing flow velocity therein below said predetermined pressure level.

4,207,743

METHOD AND DEVICE FOR IMPROVING THE OPERATION OF A SUPERCHARGED ENGINE

Andre Ecomard, Marly-le-Roi, and Pierre Eyzat, Courbevoie, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Nov. 7, 1977, Ser. No. 849,245
Claims priority, application France, Nov. 12, 1976, 76 34401
Int. Cl.[2] F02B *37/00, 33/44*
U.S. Cl. 60—611 **11 Claims**



1. A method for improving the operation of an internal combustion engine having a turbine driven by the exhaust gases of the engine, and a compressor rotated by the turbine for delivering pressurized air at its outlet when its inlet is in communication with the atmosphere, the method comprising the steps of sensing the operating conditions of the engine and depending upon said operating conditions, subjecting the en-

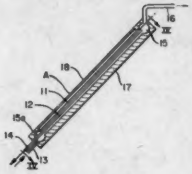
gine to one operating mode selected from a first and a second operating modes, said first operating mode corresponding to the supplying of air to the engine under a predetermined pressure exclusively from a static source while keeping low the compression work of the compressor, and said second operating mode corresponding to the supplying of air to the engine exclusively from the compressor, wherein, throughout the duration of said first operating mode, the inlet and outlet of the compressor are connected to each other.

4,207,744

SOLAR REFRIGERATION SYSTEM

Isao Takeshita; Nobuhiko Wakamatsu; Eiji Ando, and Hiroyoshi Tanaka, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Apr. 19, 1978, Ser. No. 899,104
Claims priority, application Japan, Apr. 20, 1977, 52-56262
Int. Cl.[2] F25B *27/00, 15/00*
U.S. Cl. 62—2 **5 Claims**



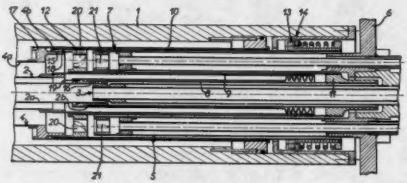
1. In a solar refrigeration system
a solar collector-generator comprising:
a casing; and
a tube and header arrangement including a top header, a bottom header and a plurality of double-walled tubes arranged in parallel between said top and bottom headers, each of said double-walled tubes including an outer pipe and an inner pipe jacketed by said outer pipe, said inner pipe defining a passage for a high temperature weak solution, said outer and inner tubes defining therebetween a passage for a low temperature rich solution.

4,207,745

DEVICE FOR HELIUM TRANSFER BETWEEN ROTATING AND NON-ROTATING MEMBERS

Jean-Paul Pouillange, Aulnay-sous, France, assignor to BBC Brown, Boveri & Cie., Baden, Switzerland

Filed Mar. 1, 1978, Ser. No. 882,094
Claims priority, application France, Mar. 3, 1977, 77 06189
Int. Cl.[2] F17C *7/02*
U.S. Cl. 62—55 **13 Claims**



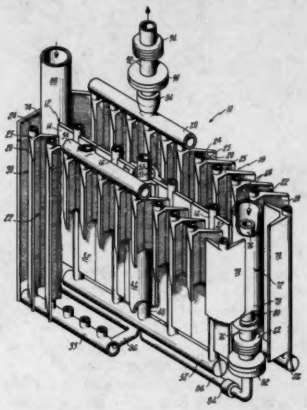
1. A device for the transfer of helium between rotating and non-rotating members, comprising:
first and second coaxial transfer reeds for the transfer of liquid helium, the first transfer reed being adapted to rotate with the rotating member, the second transfer reed being adapted to be fixed with respect to the non-rotating member, one of the transfer reeds being partially engaged in the other transfer reed with a slight radial clearance being provided in the region of axial overlap of the first and second coaxial transfer reeds; and
a cylindrical sleeve made from a softer material than the material of the first and second coaxial transfer reeds and mounted for rotation with the first rotating transfer reed, said cylindrical sleeve having first and second ends and extending axially in the slight radial clearance provided in the region of axial overlap of the first and second coaxial transfer reeds throughout substantially the entire region of axial overlap, whereby said cylindrical sleeve has a tendency to wear and become perforated before said first and second transfer reeds.

4,207,746

CRYOPUMP

David J. McFarlin, Ellington, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Feb. 13, 1979, Ser. No. 11,833
Int. Cl.[2] F17C *7/02*
U.S. Cl. 62—55.5 **13 Claims**



1. A cryopump adapted for use in an evacuated environment comprising:
a cryopanel having a plurality of coolant passages disposed therein adapted for accommodating a first refrigerant;
first manifold means for distributing a first refrigerant to each of the coolant passages wherein the first manifold means and the cryopanel are fabricated with a first material having high thermal conductivity;
means for passing first refrigerant from a source of first refrigerant to the first manifold means wherein the means for passing first refrigerant are fabricated with a second material;
a first shield disposed in a spaced apart relationship with a first side of the cryopanel;
a second shield disposed in a spaced apart relationship with a second side of the cryopanel wherein the first and second shields, each have a plurality of chevrons disposed in a spaced apart relationship with one another, are adapted for shielding the cryopanel from line-of-sight radiation while providing a gas path between each chevron capable of passing gas particles therethrough to the cryopanel and wherein each chevron includes a coolant channel adapted for accommodating a second refrigerant;
second manifold means for distributing second refrigerant to each of the coolant channels within the chevrons wherein the first and second shields and the second manifold means are fabricated with a first material having high thermal conductivity;
means for passing second refrigerant from a source of second refrigerant to the second manifold means wherein said

means for passing second refrigerant are fabricated with a second material; and

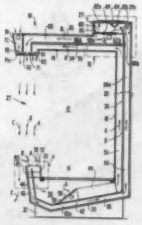
connector means for providing a vacuum tight connection at cryogenic temperatures between the second material of the means for passing first and second refrigerant and the first material of the first and second manifold means respectively.

4,207,747

AIR DEFROST SYSTEM USING SECONDARY AIR BAND COMPONENTS

Elmer J. Subera, Cassopolis, and Melvin W. Steelman, Niles, both of Mich., assignors to Tyler Refrigeration Corporation, Niles, Mich.

Division of Ser. No. 790,654, Apr. 25, 1977, Pat. No. 4,144,720.
This application Jul. 26, 1978, Ser. No. 928,313
The portion of the term of this patent subsequent to Mar. 20, 1998, has been disclaimed.
Int. Cl.[2] F25D *21/12*
U.S. Cl. 62—82 4 Claims



1. In a refrigerated display cabinet having an access opening for communicating a storage and display space within the cabinet with the ambient air, means for providing at least a primary refrigerated air band and a secondary guard air band across the access opening in substantially the same air flow direction during a normal refrigeration cycle;

an improved method of defrosting an air cooling mechanism located in the flow path of the primary band, comprising the steps of:

reversing the flow of air in said secondary band from the flow thereof during said normal refrigeration cycle, whereby ambient air is drawn into said secondary band flow path;

maintaining the air flow of said primary band in the same direction as in said normal refrigeration cycle to maintain a substantially continuous primary band air curtain across the access opening during both the refrigeration and defrost cycles; and

diverting at least a significant portion of the reverse flow of air from the secondary band into the primary band between the downstream or return end of the access opening and the air cooling mechanism during the defrost cycle to thereby cause relatively warm air to flow through said air cooling mechanism and defrost same.

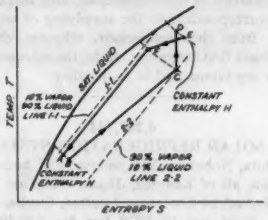
4,207,748

HEAT EXCHANGE DEVICE AND METHOD

William H. Nebgen, 48-24 43rd St., Woodside, N.Y. 11377

Continuation-in-part of Ser. No. 394,971, Sep. 7, 1973, abandoned, which is a continuation-in-part of Ser. No. 886,312, Dec. 16, 1969, abandoned, which is a continuation of Ser. No. 808,368, Mar. 11, 1969, abandoned, which is a continuation of Ser. No. 660,539, Jun. 22, 1967, abandoned, which is a continuation-in-part of Ser. No. 602,214, Dec. 16, 1966, abandoned. This application Feb. 22, 1977, Ser. No. 771,002
Int. Cl.[2] F25B *1/00*
U.S. Cl. 62—115 13 Claims

1. A method for exchange of heat comprising vaporizing a portion of a body of liquid refrigerant by countercurrent absorption of heat from a material to be cooled to form a liquid always in contact with and substantially undispersed in a vapor phase, compressing both phases and then removing heat from



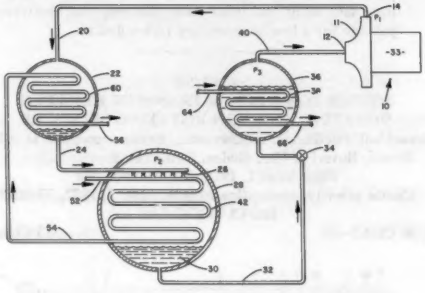
said phases to cause condensation thereof and wherein said phases are compressed during the absorption of heat from the material to be cooled.

4,207,749

THERMAL ECONOMIZED REFRIGERATION SYSTEM

William J. Lavigne, Jr., Fayetteville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Continuation of Ser. No. 828,449, Aug. 29, 1977, abandoned.
This application Sep. 21, 1978, Ser. No. 944,426
Int. Cl.[2] F25B *1/00, 41/04, 43/02*
U.S. Cl. 62—115 9 Claims



6. A method of subcooling liquid refrigerant within a refrigeration system after the refrigerant has been condensed to a liquid in a condenser and before the liquid refrigerant enters the evaporator comprising the steps of:

transporting liquid refrigerant from the condenser into a container at a lower temperature and pressure than the condenser whereby a portion of the refrigerant is flashed to a vapor and the heat to vaporize the refrigerant is absorbed from the remaining liquid refrigerant to subcool the remaining liquid refrigerant;

condensing the vaporized refrigerant to a liquid within the container; and

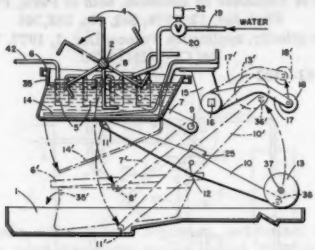
combining the condensed liquid refrigerant with the subcooled liquid refrigerant before the liquid refrigerant enters the evaporator.

4,207,750

APPARATUS FOR MAKING ICE BLOCKS

Marcellus C. P. L. Simkens, Kasteel Bloemendale, B - 8030 Beernem, Belgium

Filed Jun. 19, 1978, Ser. No. 916,861
Claims priority, application Belgium, Jun. 27, 1977, 256025
Int. Cl.[2] F25C *1/10*
U.S. Cl. 62—138 8 Claims



1. An apparatus for making ice blocks comprising:
a frame,
hollow parts fixedly mounted on the frame and projecting downwards,
means for circulating refrigerating fluid through said parts,
means for circulating heating fluid through said parts,
a tray open at the top,
a suspension mounted to the frame and carrying said tray so that it can move up and down between an uppermost position wherein the hollow parts are inside the tray, and a lowermost position, wherein the hollow parts are outside the tray,
a counterweight on the suspension countering a downward movement of the tray,
a water supply line discharging above said tray,
means opening and closing said water supply line,
a first element put into operation by ice formed on said projecting parts and bringing, after ice has been formed, said means opening and closing the water supply line in open position when the tray is in an upper part of its way between the uppermost position and the lowermost position, causing a water supply to the tray and subsequently, because of gravity, a downward movement of the tray,
a second element bringing said means opening and closing the water supply line in closed position when the tray reaches its lowermost position, and
means allowing water to flow away out of the tray in its lowermost position, causing a loss of water until the counterweight causes an upward movement of the tray.

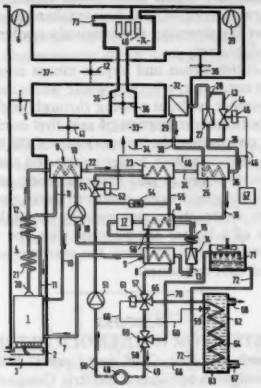
4,207,751

SORPTION HEAT PUMP

Ottomar Kampfenkel, Hückeswagen, and Antun Gelesic, Neuss, both of Fed. Rep. of Germany, assignors to Joh. Vaillant GmbH u. Co., Remscheid, Fed. Rep. of Germany

Filed Aug. 9, 1978, Ser. No. 932,322
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1977, 7725127[U]; Aug. 10, 1977, 7725128[U]; Aug. 10, 1977, 7725129[U]; Dec. 17, 1977, 7738864[U]
Int. Cl.[2] F25B *15/00, 27/02, 13/00, 41/04*
U.S. Cl. 62—141 22 Claims

1. A sorption heat pump comprising a discharge unit, an absorber, a condenser, an evaporator with a preconnected expansion valve, said condenser and said absorber being designed as a heat exchanger for heating a fluid utilized as an energy consumption fluid in an energy consumption device, said expansion valve being bridged by a bypass valve, with said condenser heat exchanger being separated from said energy



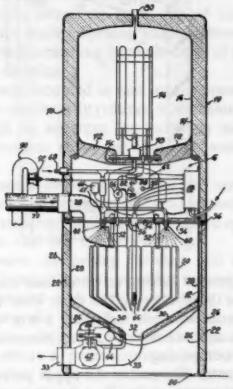
consumption device by a valve capable of being actuated by a transmitter together with said bypass valve.

4,207,752

METHOD AND APPARATUS FOR RECOVERING HEAT FROM WASTE WATER

Michael Schwarz, 963 Choquette Blvd., Beloeil P.Q., Canada

Filed Sep. 6, 1978, Ser. No. 940,126
Int. Cl.[2] F25B *27/02;* G05D *23/00*
U.S. Cl. 62—238 6 Claims



1. An apparatus for recovering heat from waste water, the apparatus comprising:
a first container for receiving waste water;
inlet means in the upper portion of said first container adapted to be connected to a drain pipe from hot water facilities;
outlet means in the bottommost portion of said first container for draining the waste water from the first container;
valve means operable to control said outlet means in response to a waste water level indicator and a relative heat indicator;
a second container for receiving a liquid to be prewarmed, said second container being separate from said first container;
heat pump means including heat exchanger means in said

first container and communicating with heat exchanger means in said second container, whereby heat is extracted from relatively warm waste water in the first container and is transferred to said heat exchanger in said second container for warming the relatively cooler liquid in said second container;

overflow outlet means and bypass means cooperating with said first container, whereby waste water may bypass said first container without passing through said outlet means in said bottommost portion of said first container;

means for comparing the temperature of the water passing through said overflow outlet means and the temperature of the waste water in said first container; and

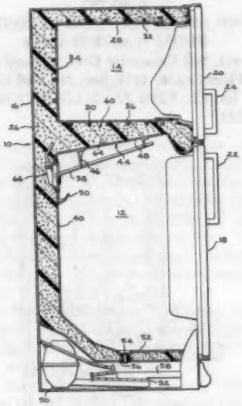
means operating said valve means to drain part of said first container when the water passing through said bypass means is of a higher temperature than the water in said first container, thus to allow the warmer waste water to enter said first container.

4,207,753

DRAIN SYSTEM FOR HOUSEHOLD REFRIGERATOR

Samuel B. Shueh, San Jose, Calif., and Louis C. Williams, Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Nov. 20, 1978, Ser. No. 962,427
Int. Cl.[2] F25D *21/14*
U.S. Cl. 62—285 **11 Claims**



1. In a refrigerator having an outer case and an inner liner with insulation therebetween, the inner liner forming a fresh food storage compartment including a top wall having an interior surface and an exterior surface, rear wall, bottom wall, and side walls comprising:

(a) an evaporator disposed in the upper portion of said food storage compartment in close proximity to the top wall and inclined toward the rear wall,

(b) an elongate opening in the rear wall,

(c) a drain trough disposed on the interior surface of the rear wall below the evaporator and elongate opening,

(d) a cover member positioned in and covering the elongate opening, said cover member having

(i) a peripheral flange abutting the interior surface of the rear wall,

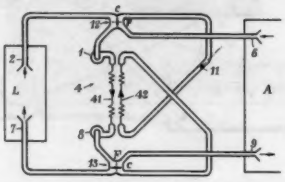
(ii) a recess body portion extending from the interior surface through the elongate opening, said recess body portion having a centrally located opening and a trough on each side of the opening along its upper portion underlying the exterior surface of the top wall of the inner liner, both troughs being inclined downwardly to the centrally located opening, whereby water on the exterior surface of the top wall will collect in the troughs and flow to the centrally located opening and therethrough to the drain trough on the interior of the rear wall.

4,207,754

AIRCONDITIONING SYSTEM SUITABLE FOR RESIDENTIAL USE

Jean Chaboseau, and Andre Regef, both of Paris, France, assignors to Cem Compagnie Electro-Mecanique and Centre Scientifique et Technique du Batiment, both of Paris, France

Filed Jan. 12, 1978, Ser. No. 868,746
Claims priority, application France, Dec. 1, 1977, 77 00708
Int. Cl.[2] F25D *9/00*
U.S. Cl. 62—402 **16 Claims**



1. An airconditioning system suitable for residential use comprising:

a first air circuit including a compressor unit in series with a first chamber of a heat exchanger and a turbine, the turbine, the first chamber of the heat exchanger and the compressor being arranged in series in that sequence in the direction of air flow;

a second air circuit comprising a second chamber of said heat exchanger, the first and second chamber being the relative low and high temperature chambers, respectively, of the heat exchanger;

first and second registers connected to the ends of said two air circuits, each register having four orifices and two operational positions; and,

means for moving said first and second registers to first and second operational positions to respectively heat and cool an area, wherein in the first operational position of the registers, used air is withdrawn from an area to be heated and is circulated in said second air circuit and fresh air is drawn from the atmosphere and is circulated in said first air circuit and in the second operational position of said registers used air is withdrawn from an area to be cooled and is circulated in said first air circuit while fresh air is drawn from the atmosphere and is circulated in said second circuit.

4,207,755

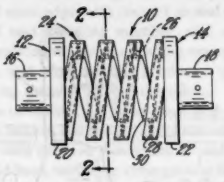
UNIVERSAL JOINT FOR TRANSMITTING TORQUE FROM ONE SHAFT TO ANOTHER

Warren W. Weible, Defiance, Ohio, assignor to The Zeller Corporation, Defiance, Ohio

Continuation-in-part of Ser. No. 744,885, Nov. 24, 1976, abandoned. This application Nov. 20, 1978, Ser. No. 962,241
Int. Cl.[2] F16D *3/52*
U.S. Cl. 64—15 B **18 Claims**

1. A universal joint for transmitting torque from one shaft to another shaft, said universal joint comprising a first member, means for attaching a central portion of said first member to one of said shafts to position said first member transversely to the longitudinal extent of said shaft, a second member, means for attaching a central portion of said second member to the other of said shafts to position said second member transversely to the longitudinal extent of said other shaft, and curved bridging means having one end attached to said first member and having another end attached to said second member with an outer portion of said bridging means being placed in tension and an inner portion of said bridging means being

placed in compression when torque is transmitted from one shaft to the other shaft in one direction and the outer portion of said bridging means being placed in compression and the inner portion of said bridging means being placed in tension when torque is transmitted from one shaft to the other shaft in the opposite direction, said bridging means having at least one transverse portion which is positioned, as viewed in transverse cross section, with a directional component parallel to the axes



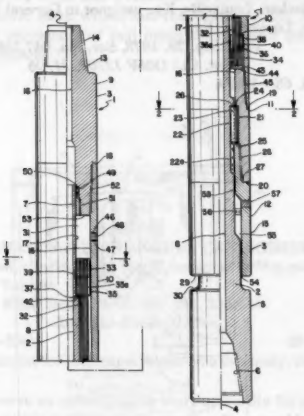
of the shafts, when in axial alignment, and further having at least one other transverse portion which is positioned, as viewed in transverse cross section, with a directional component perpendicular to the axes of the shafts, when in axial alignment, the resistance of said bridging means to bending in the direction parallel to the shaft axes, as measured in pounds per degree of deflection per inch of length, being at least three times the resistance to twisting, as measured in inch-pounds per degree of deflection per inch of length.

4,207,756

TENSION SHOCK ABSORBER DEVICE

Lester Toelke, Houston, Tex., assignor to Well Control, Inc., Houston, Tex.

Filed Oct. 21, 1977, Ser. No. 844,233
Int. Cl.[2] F16D *3/00*
U.S. Cl. 64—23 **36 Claims**



1. Shock absorber device for use in well bore drilling to absorb drill bit vibratory displacement shock comprising

a pair of slidably associated longitudinal elements interengageably interconnected for common rotation about a longitudinal axis and for selectively limited relative reciprocal displacement longitudinally with respect to each other along such axis, with one of such elements being operatively connectable to a component of a drill string and the other of such elements being operatively connectable to a drill bit, and

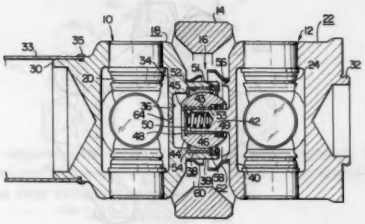
resilient tension shock absorbing means self-disposed completely within the device and interposed between such elements and operatively bilaterally independently interconnecting such elements in resilient suspension relation with respect to each other for absorbing under tension dynamic longitudinal stress corresponding to vibratory drill bit displacement shock acting through one of such elements.

4,207,757

DOUBLE CARDAN UNIVERSAL JOINT

Kiyoshi Onuma, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 27, 1978, Ser. No. 928,618
Claims priority, application Japan, May 17, 1978, 53-58692
Int. Cl.[2] F16D *3/26*; F16C *1/24*
U.S. Cl. 64—17 R **7 Claims**



1. In a double Cardan universal joint including:

a pair of cross joint assemblies each including a yoke and a trunnion of a cross;

a motion transmitting ring; and

a centering assembly comprising

a socket portion extending from one of said yokes and formed with a socket opening and a lubricant reservoir,

a cylindrical stem extending from the other of the yokes into said socket opening,

an annular insert mounted in said socket opening,

a ball member oscillatorily retained in said annular insert and formed with an aperture for receiving said cylindrical stem for rotation about its own axis and axial sliding movement,

a first seal means disposed between the outer peripheral surface of said ball member and said socket portion, and

a second seal member disposed between said aperture in said ball member and said cylindrical stem;

the improvement comprising forming said annular insert from a self-lubricating shoe member formed of a synthetic resinous material and further including a metallic ring member integrally formed with at least a portion of said self-lubricating shoe member and having a flange portion extending about a predetermined portion of said self-lubricating shoe member, said annular insert being formed with yielding means for allowing said insert to be deformable radially outwardly so that it can be fitted about said ball member.

4,207,758

HIGH SPEED SHAFT FLEXIBLE COUPLING WITH MAXIMUM SHAFT MISALIGNMENT ACCOMMODATION CAPABILITY

Robert A. Stone, Sandy Hook, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 666,113, Mar. 11, 1976, abandoned.
This application Jun. 19, 1978, Ser. No. 916,688
Int. Cl.[2] F16D *3/60*
U.S. Cl. 64—12 **38 Claims**

1. A flexible coupling of annular shape and concentric about a coupling axis for drivingly connecting a driving rotating shaft adapted to be driving in a single direction of rotation in

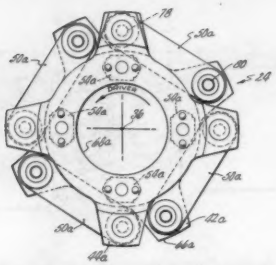
operation at speeds up to 25,000 RPM to a driven rotating shaft adapted to be driven in that single direction of rotation in operation at speeds up to 25,000 RPM while permitting substantial misalignment variation between the shaft axes comprising:

(1) a first flange-type member adapted to be connected to the driving shaft,

(2) a second flange-type member adapted to be connected to the driven shaft,

(3) at least three flexible, fixed length strap members positioned in substantially continuous concentric circumferential array about the coupling axis and extending between said flange-type members,

(4) means directly fixedly connecting a first end of each strap member to said first flange-type member and the other end of each strap member directly and fixedly to said second



flange-type member so that said strap members are the sole connection between said first and second flange-type members and determine the location of said coupling axis and are equally loaded in tension at all times as driving loads are imparted therethrough as said first flange-type member drives said second flange-type member so that said strap members react in the equal tension loading thereof to give the coupling torsional stiffness to permit transmittal of substantial loads and stiffness lateral to the coupling axis to avoid eccentricity and provide dynamic stability to the coupling, and so that said strap members react in strap member flexing to give coupling flexibility along the coupling axis to accommodate relative axial motion between the driving and driven shafts, and angular flexibility to accommodate substantial misalignment variation between the driving and driven shaft axes of as high as ±1.5 degrees.

4,207,759

MACHINE, ESPECIALLY A DYEING MACHINE, FOR PIECES OF FABRIC

Bernard Barriquand, Roanne, France, assignor to Barriquand, Roanne, France

Filed Jun. 21, 1978, Ser. No. 917,408

Claims priority, application France, Jun. 22, 1977, 77 19068; Jun. 28, 1977, 77 19747

Int. Cl.[2] **D06B** *3/20*

U.S. Cl. 68—15 **15 Claims**

1. A processing machine, especially for dyeing, bleaching, and drying pieces of fabric, comprising:

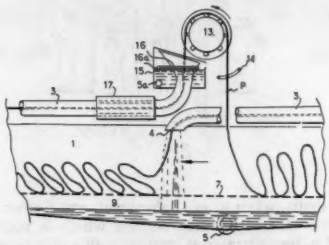
vat means of generally annular shape for containing and conveying an elongated strip of fabric along a generally circular path in a gaseous atmosphere, said vat means being rotatable about a vertical axis and having a perforated bottom wall; and means for rotating said vat means about said vertical axis;

a liquid recovery tank located beneath said vat means for receiving liquid passing through the perforated bottom of said vat means;

hydraulic propulsion and treating means tc receive the elongated fabric, to treat the fabric with a liquid dyeing or bleaching bath and to hydraulically pass the fabric with the liquid therethrough to the vat, said means comprising an overflow box mounted above said vat means;

feed roller means, mounted horizontally above said vat and adjacent said overflow box, for passing the fabric into said overflow box, and adapted to engage the fabric when the fabric emerges from the vat;

recycling pump means, for pumping the liquid from said recovery tank to said overflow box; and



detection and safety means, for determining the formation of tangles and knots in said fabric as it passes through said overflow box, and including a pivoting means for pivoting around a horizontal axis when tangles or knots in the fabric contact said pivoting means, said pivoting means being normally in a first position whereby said roller means is driven forwardly to feed fabric to said overflow box, and said pivoting means having a second position whereby the fabric intially ceases its forward movement and is then propelled backwardly.

4,207,760

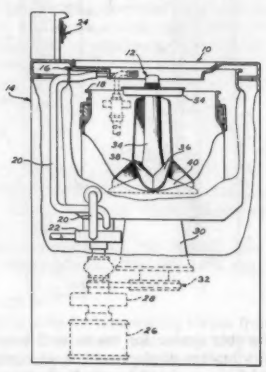
VANE ARRANGEMENT FOR CLOTHES WASHING MACHINE

John Bochan, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Sep. 29, 1978, Ser. No. 947,238

Int. Cl.[2] **D06F** *13/02, 21/06*

U.S. Cl. 68—18 FA **20 Claims**



1. In combination with a vertical axis washing machine of the type including a fabric item receiving receptacle means, means for introducing a wash solution into said receptacle, and means for agitating the wash solution-fabric item load, said means including a rotatable wash load agitating member and means for rotating said agitating member about an axis, alternately in one direction and the opposite direction, said agitating member having a portion thereof located in the lower

region of said receptacle to come into contact with said fabric item load in the lower region of said receptacle;

a vane arrangement carried by said agitating member portion comprised of at least one vane shape having a vane edge leading with respect to said one direction of rotation of said agitating member and extending generally horizontally through said lower region in a radially canted direction with respect to said axis of rotation of said agitating member and further having a surface adjacent the trailing side of said vane edge with respect to said one direction of rotation of said agitating member, said surface inclined from the vertical, whereby a draping engagement of fabric items with said vane edge is produced upon rotation of said agitating member in said direction;

said direction of radial cant being such as to locate said axis of rotation behind the line of said vane edge as said vane edge leads said rotative movement of said agitating member into said load, said vane arrangement further including at least one other vane shape, said at least one other vane shape having a vane edge leading with respect to said opposite direction of rotation of said agitating member and extending along a radially canted direction, said at least one other vane shape further including a surface adjacent the trailing side of said one other vane shape vane edge with rotation of said agitating member in said opposite direction, said surface being inclined from the vertical; said direction of radial cant of said one other vane shape vane edge being such as to locate said axis of rotation behind the line of said one other vane shape vane edge as said one other vane shape vane edge leads said rotative movement of said agitating member into said load;

whereby fabric items in contact with said vane shapes are forced into draping engagement with said respective vane edges by said rotation in said one direction and said opposite direction, said vane edges acting on said fabric items during said alternate rotation in said one and said opposite directions to cause a radially outward ramping movement of said fabric items and a resultant circulating movement of said fabric items within said receptacle by said radially outward movement of said items in the lower region of said receptacle.

4,207,761

APPARATUS FOR FLANGING CAN BODIES

Allan J. Niemi, Castle Rock, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Dec. 6, 1978, Ser. No. 966,934
Int. Cl.² B21D *22/06*
U.S. Cl. 72—354 **10 Claims**

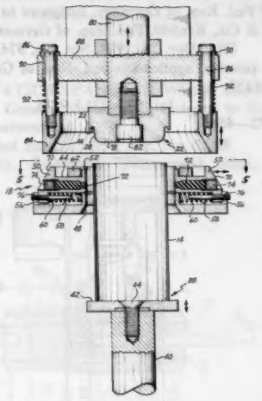
1. An apparatus for forming a flange on a can body, comprising:

means to move an unflanged can body upwardly for prepositioning within a substantially annular die assembly,

a vertically movable punch assembly having a curling groove in the face of a punch substantially coextensive with the top edge of a prepositioned can body,

a plurality of radially slidable segments within the die assembly abutting at least a portion of the upper outer surface of the can body and forming a substantially annular lip extending about the circumference of the can body at a vertical elevation below the top edge of the can when the segments are in their radially innermost positions

means for moving the punch downwardly whereby when the curling groove impacts the top edge of the can body it will bend the edge over the lip as it continues downwardly, and



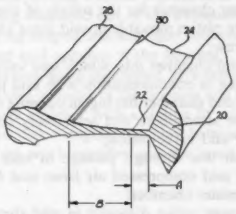
means supplemental to the radially slidable segments for restraining movement of the can body when the segments are in their radially innermost positions.

4,207,762

METHOD OF FORMING HIGH QUALITY FORGINGS

Vernon A. Kelly, Jr., 3446 Claremore Ave., Long Beach, Calif. 90808

Filed Aug. 11, 1978, Ser. No. 932,777
Int. Cl.² B21D *22/00*
U.S. Cl. 72—360 **11 Claims**



1. A method of forming high quality forgings utilizing forging dies characterized by die members each having the desired die impression surrounded by a flash land which in turn is generally surrounded by a gutter, the gutter being surrounded by a flat die surface for contacting the corresponding die surface on the mating die member, comprising the steps of

(a) forming a blocked part having an amount of material in the blocked part substantially equal to the material in the desired finished part, and

(b) forging a finished part from the blocked part, the finished part having a controlled flash extension over at least a predetermined portion of the parting line adjacent the region of the part where material characteristics are to be controlled, the controlled flash extension being characterized by a finishing die flash extension ratio B/A of less than 2-to-1; where A is the flash land width of the finishing die and B is the length of flash extension formed by the finishing die flash lands in the finishing operation as measured from the outer edge of the final flash land impression and the line of first contact of the outer edge of the finishing die flash land with the material therebetween.

4,207,763

SCREW PRESS

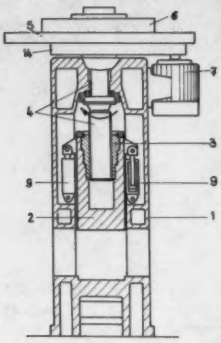
Eduard J. C. Huydts, Düsseldorf, and Helmut Dischler, Neuss, both of Fed. Rep. of Germany, assignors to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Dec. 26, 1978, Ser. No. 974,493

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1978, 2801139

Int. Cl.[2] B21J *9/18*

U.S. Cl. 72—454 7 Claims



1. In a screw press of the type having a screw driven by a flywheel and a pneumatically operated coupling between the flywheel and the screw, the coupling having a pressure chamber supplied with compressed air via a one-way valve and dischargeable by the action of an inertial mass which moves with the screw during its working stroke and inertially relative to the screw at the end of a working stroke to open a discharge orifice in the pressure chamber for releasing the compressed air to the atmosphere, the improvement comprising:

(a) an input chamber for the supply of compressed air;

(b) a valve piston movable in said input chamber, axially of said screw;

(c) a second chamber into which said valve piston projects and being in communication with said pressure chamber, said second chamber having an opening in communication with the atmosphere and selectively covered or uncovered by said valve piston;

(d) at least one through passage in said valve piston for feeding said compressed air from said input chamber to said pressure chamber;

(e) a one-way valve disposed in said through passage for preventing the return of compressed air from said pressure chamber to said input chamber; and

(f) servo-valve means operable by the inertial movement of said mass for causing said valve piston to uncover said opening in the second chamber, so as to release the compressed air in said pressure chamber to the atmosphere.

4,207,764

PRECISION FIN INDEXING DEVICE FOR WIND TUNNEL MODELS

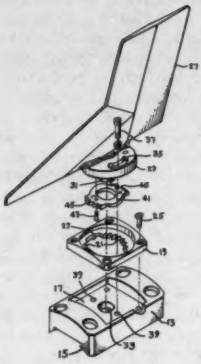
Richard S. Wallace, Anaheim, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 5, 1979, Ser. No. 17,626

Int. Cl.[2] G01M *9/00*

U.S. Cl. 73—147 2 Claims

1. A precision fin indexing device for wind tunnel models and the like having a contoured surface thereon, said indexing device comprising an adapter positioned in a cavity on the surface of the model, said adapter having its lower surface conforming to the contour of a balance block, housing a 6-component strain gage balance to measure aerodynamic forces on fins, a cavity formed in the upper surface of said adapter, a modified ring gear positioned in the cavity in said adapter and rigidly attached thereto, said ring gear having internal gear teeth in two diametrically opposed quadrants, the other opposed quadrants in said ring gear being relieved for clearance, an aerodynamic fin positioned on said adapter for rotational movement relative thereto, a cylindirical hub fixidly attached to the lower surface of said aerodynamic fin, a shaft extension downwardly extending from said hub for engagement with a close fitting hole in said adapter, a modified spur gear attached to said hub and concentric with said shaft extension, said spur gear having two diametrically opposed quadrants of external teeth for engagement with said ring gear, the other opposed quadrants of teeth on said spur gear being removed for clearance, and means for clamping said aerodynamic fin at fixed increments of repeatable angular positions relative to the model centerline.



4,207,765

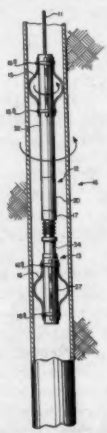
METHOD AND APPARATUS FOR DETERMINING THE POINT AT WHICH PIPE IS STUCK IN A WELL

Edville A. Kiff, 129 Hamilton Rd., Gretna, La. 70053

Filed Nov. 14, 1978, Ser. No. 960,580

Int. Cl.[2] E21B *47/00*

U.S. Cl. 73—151 11 Claims



1. An apparatus adapted to be suspended from an electrical cable and operated at different locations in a string of pipe to obtain measurements representative of deformations occuring therein in response to the application of forces to its upper end

for determining at least the approximate location at which the string of pipe may be stuck in a well bore comprising:

a. upper section means and lower section means including upper and lower wall engaging means adapted for respectively establishing anchoring engagement with the adjacent spatially-disposed wall surfaces of the pipe string;

b. single transducer means cooperatively arranged in said upper section means adapted for producing an output signal responsive to longitudinal deformations occuring in an incremental length of a pipe string when an upward force is applied to the surface end of said pipe string or to angular deformations occuring in an incremental length of a pipe string when torque is applied to the surface end of said pipe string; and,

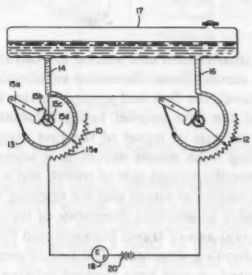
c. means for translating said angular deformations and said longitudinal deformations to longitudinal displacement of wiper arm means contained in said transducer including cam means rotatably received in said upper section, said cam means having lower rod means rigidly connected to said lower section means and upper rod means rigidly connected to said wiper arm means.

4,207,766

ATTITUDE COMPENSATING LIQUID CONTENT INDICATOR

Samuel Ruben, New Rochelle, N.Y., and Philip E. Kalker, Northvale, N.J., assignors to eMDee Corporation, Northvale, N.J.

Filed Aug. 12, 1977, Ser. No. 824,046
Int. Cl.² G01F *23/18*
U.S. Cl. 73—301 **5 Claims**



1. An indicator apparatus for measuring the liquid contents of a container which comprises a weight-responsive, attitude correcting sensing assembly, said sensing assembly comprising paired, weight-responsive variable resistors disposed in fluid connection with said container, each of said resistors comprising a fluid chamber extending from the bottom of said container, said chamber including at least one movable wall which moves in response to change in the weight of said liquid, a rheostat including a mechanical resistance output adjustment means, and a rheostat linkage means mechanically connecting said movable wall and said adjustment means to transmit the movement of said movable wall to move said adjustment means to vary said resistance output,

said resistors located at opposite ends of said bottom and electrically connected to each other by direct series connection extending between said output adjustment means,

whereby the total resistance developed by said resistors, comprising the sum of the individual resistances developed by each resistor, remains constant for a particular quantity of liquid;

a voltage compensated electric current-responsive meter directly electrically connected to receive the current output of said sensing assembly and said resistors; and

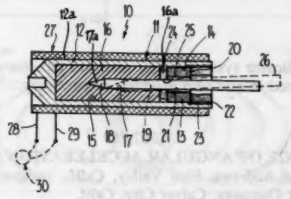
a source of voltage directly electrically connected between the input end of said sensing assembly and the output end of said meter to supply electric current for the operation of said indicator apparatus.

4,207,767

THERMOSTATIC EXPANSIBLE WORK ELEMENT

Josef Schmucki, Gossau, Switzerland, assignor to Elektrowatt AG, Zürich, Switzerland

Filed Jan. 22, 1979, Ser. No. 5,295
Claims priority, application Switzerland, Mar. 2, 1978, 1185/78
Int. Cl.² G01K *5/48*
U.S. Cl. 73—363 **12 Claims**



1. A thermostatic expansible work element comprising:

a housing;

an expansible body formed of plastic enclosed in said housing;

said housing being provided with an opening;

a work member having a pointed end extending with play through said opening of the housing;

said expansible body having a bore for snugly receiving the pointed end of said work member;

said work member, during thermal expansion of the expansible body, being displaced out of the expansible body;

a substantially ring-shaped disk arranged between the expansible body and said opening of the housing;

said ring-shaped disk being interposed between said expansible body and said opening of the housing and being seated upon said work member with a sliding fit; and

said ring-shaped disk bridging the play between the outer diameter of the work member and the inner diameter of the opening.

4,207,768

INDICATOR INSTRUMENT, PARTICULARLY FOR VEHICLES

Heinrich Henss, Kronberg, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 942,971
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1977, 2742111
Int. Cl.² G01D *11/24*
U.S. Cl. 73—431 **13 Claims**

1. An indicator instrument, particularly for motor vehicles, comprising

a housing made of elastically deformable synthetic material,

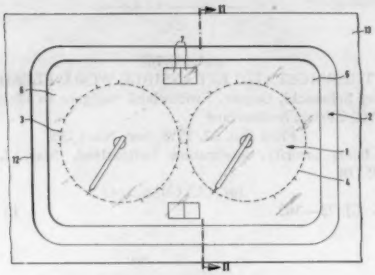
an indicator system carrier being connected with said housing,

at least one indicator system fastened on said carrier,

a window shield being fastened on said housing and arranged in front of said at least one indicator system,

said housing defining opposite inner sides and being formed at least on two of said opposite inner sides with two

grooves, said two grooves being arranged spaced apart from one another,



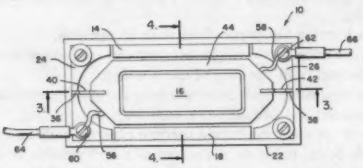
said indicator system carrier and said window shield being snapped in said two grooves, respectively.

4,207,769

CHANGE OF ANGULAR ACCELERATION SENSOR

H. Eugene Andrews, Simi Valley, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jul. 24, 1978, Ser. No. 927,695
Int. Cl.² G01P *15/08*
U.S. Cl. 73—517 A **3 Claims**



1. A sensor for sensing the change of rate of angular acceleration of a body, said sensor having a sensitive axis, said sensor comprising:

a base plate for mounting on the body; magnet means for producing a magnetic field at an angle with respect to said axis, said magnet means being mounted on said base plate;

electric coil means having first and second oppositely wound legs at least partially positioned in the magnetic field for producing a voltage in said coil means when said coil means is moved with respect to said magnet means angularly about the sensitive axis; and

mounting means for resiliently rotationally mounting said coil means for resilient rotation about said sensitive axis, said coil mounting means being a torsionally resilient support at each end of said coil means, said torsionally resilient support being secured to said coil means, first and second clamp blocks positioned on said base plate, said torsionally resilient supports being respectively clamped by said clamp blocks so that as the body changes in rotational acceleration about its axis, said rotationally resilient mounting means rotates due to inertia so that said coil legs cut magnetic lines of force to produce an electric signal in said coil means.

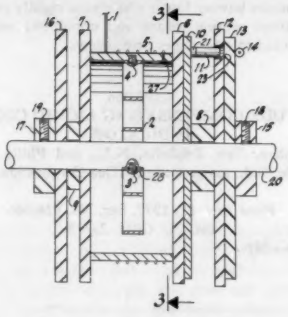
4,207,770

CHANGE OF DIRECTION SENSING MECHANISM

Gerald Grushow, 14 Dartmouth Dr., Plainview, N.Y. 11803

Filed May 7, 1979, Ser. No. 36,864
Int. Cl.² G01P *15/00*
U.S. Cl. 73—517 R **28 Claims**

1. A direction sensor device comprising in combination: at least one magnet element as a first magnet having a first substantially smooth surface adapted to slip in the nature of a slip-clutch on and along an adjacent second substantially smooth surface; a movable driving mass means for imparting driving and moving force to the first magnet when the first magnet is mounted magnetically onto the movable driving mass means, said movable driving mass means having said adjacent second substantially smooth surface with said first magnet magnetically-mounted thereon; a base element separate from the stationary relative to said driving mass means and the base element including spaced-apart first and second barrier travel-limiting structures positioned a predetermined minimum distance away from one-another and on opposite sides of said first magnet, said predetermined minimum distance being larger than said first magnet's dimension as the first magnet is measured along a first linear dimension substantially parallel to said axis of travel, and said predetermined minimal distance



being always smaller than said second smooth surface as measured along a second linear dimension substantially parallel to said axis of travel, the first and second barrier travel-limiting structures and the first magnet being substantially lineally-aligned along an axis of travel of the first magnet when the movable driving mass means moves in a common direction substantially parallel to said axis of travel; and a switch means for closing an electrical circut and for opening said electrical circuit responsive to alternate directions of travel of said first magnet along said axis of travel between said first and second barrier travel-limiting structures, the switch means being stationarily mounted on said base element relative to said movable driving mass means, whereby movement of the movable driving mass means causes the switch means to make or break electrical circuit of a circuit within which the switch means is integrated.

4,207,771

METHOD AND APPARATUS FOR MONITORING CRACKING USING STRESS WAVE EMISSION TECHNIQUES

Mark F. Carlos, Hamilton Township, Mercer County; Min-Chung Jon, and Vito Palazzo, both of East Windsor Township, Mercer County, all of N.J., assignors to Western Electric Company, Inc., New York, N.Y.

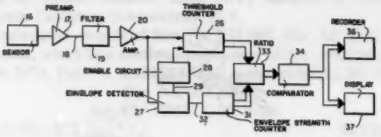
Filed Mar. 2, 1979, Ser. No. 16,686
Int. Cl.² G01N *29/04*
U.S. Cl. 73—587 **9 Claims**

5. An apparatus for determining whether a detected signal is a stress wave emission, the apparatus comprising:

(a) means for determining a first value that is proportional to the number of pulses of the detected signal having an amplitude exceeding a preset threshold during a period of time;

(b) means for determining a second value that is proportional to the area under an envelope of the detected signal during said time period;

(c) means for forming a ratio of the area value to the pulse value; and



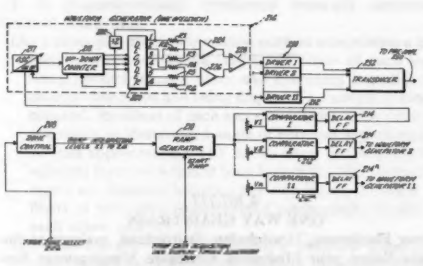
(d) means for comparing the ratio so formed to a predetermined range of ratio values which are indicative of a stress wave emission.

4,207,772

ELECTRONIC DRIVE SYSTEM AND TECHNIQUE FOR ULTRASONIC TRANSDUCER

Milton Stoller, West Hartford, Conn., assignor to Mediscan, Inc., South Windsor, Conn.

Filed Jul. 11, 1977, Ser. No. 814,474
Int. Cl.[2] A61B *10/00*
U.S. Cl. 73—620 **5 Claims**



1. Apparatus for the non-destructive and non-invasive testing of objects comprising:

ultrasound transducer means, said transducer means including a piezoelectric crystal having a coaxial array of annular electrodes on at least one surface thereof, said transducer means generating a beam of ultrasonic energy in response to the application of electrical drive signals to said electrodes of said array;

electrical drive signal generating means, said drive signal generating means being equal in number to the electrodes of said array, said drive signal generating means each including:

an oscillator, said oscillator providing an output signal;

a counter which receives the output signal of said oscillator as an input, said counter having a plurality of output terminals;

decoder means, said decoder means having input terminals connected to said counter output terminals and providing a plurality of output signal which vary in number as a function of the elapsed time since the initiation of generation of an output signal by said oscillator; and

summation means selectively coupled to the outputs of said decoder means for forming a composite sum-difference of the output signals of said decoder means, said composite signal having a preselected waveform;

means for delivering the composite signals provided by individual of said drive signal generator means as drive signals to individual of said electrodes;

means for individually controlling the time of application of signals from said drive signal generator means to said delivering means to thereby vary the focal length of the generated beam of ultrasonic energy, said controlling means individually gating said drive signal generating means oscillators into the operative state to initiate the generation of an output signal by said oscillators; and

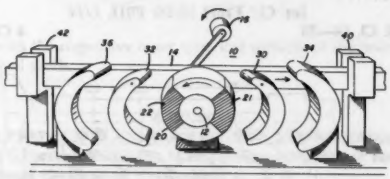
receiver means connected to said transducer means, said receiver means being responsive to electrical signals commensurate with the incidence on said transducer means crystal of ultrasonic energy reflected from the object being tested for providing information commensurate with a characteristic of the test object.

4,207,773

MAGNETIC PISTON MACHINE

Robert F. Stahovic, 115 Church Rd., Lot 100, Butler, Pa. 16001

Continuation of Ser. No. 738,655, Nov. 4, 1976, abandoned. This application Nov. 16, 1978, Ser. No. 961,286
Int. Cl.[2] F16H *21/16;* H02K *7/06*
U.S. Cl. 74—25 **10 Claims**



1. A device for converting rotary motion into linear motion comprising:

a rotatable shaft;

a plurality of magnet sections supported from said shaft for rotations therewith;

an elongated member supported for reciprocating linear motion;

a pair of spaced apart movable magnets, having like poles facing, secured to said elongated member and disposed with said plurality of magnet sections positioned therebetween; and,

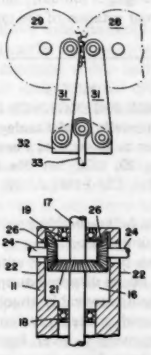
a pair of stationary magnets, having like poles facing, aligned with but positioned outside of said pair of spaced apart movable magnets.

4,207,774

DRIVE MECHANISM FOR PISTON ENGINES

Arnold J. Schwemin, Danville, Calif., assignor to Energy Dynamics, Inc., Oakland, Calif.

Filed Nov. 4, 1977, Ser. No. 848,564
Int. Cl.[2] F16H *21/18*
U.S. Cl. 74—42 **6 Claims**



1. A drive mechanism for linking the reciprocating pistons of an engine to a rotating shaft, comprising a main gear disposed on said rotating shaft; at least one drive gear engaging said

main gear; a piston rod extending from each of said pistons; a plurality of paired eccentric arms, each pair of which is joined at one end thereof to one of said piston rods; a plurality of gear wheels, each joined to one of said drive gears in common rotation therewith; a plurality of idler gears, each meshing with one of said gear wheels in paired relationship; and wherein each of the other ends of said each pair of eccentric arms is joined to one of a pair of said idler gears and said gear wheels.

4,207,775

FUEL PUMPING APPARATUS

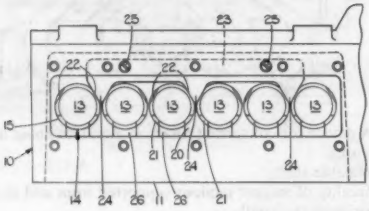
Edward R. Lintott, London, England, assignor to Lucas Industries Limited, Birmingham, England

Filed May 26, 1978, Ser. No. 910,069

Claims priority, application United Kingdom, Jun. 17, 1977, 25426/77

Int. Cl.[2] F16H *53/06;* **F01L** *1/14*

U.S. Cl. 74—55 **4 Claims**



1. A fuel pumping apparatus comprising a housing including a plurality of cylinders; a piston reciprocable within each cylinder; a tappet assembly operatively connected to each piston and including a tappet body and a tappet roller rotatably carried thereby, each tappet body having a guide surface thereon, the guide surfaces on each adjacent pair of tappet bodies being mutually facing; a plurality of rotatable cams each engaged by a respective one of the tappet rollers, such that rotation of each cam in use causes reciprocation of the respective tappet assembly and the respective piston; the housing also including a block having a plurality of bores therethrough, each bore slidably housing a respective one of the tappet assemblies; and the apparatus further comprising a guide assembly mounted on a side of said block remote from the rotatable cams, the guide assembly including wedge shaped guide members each of which extends between a respective adjacent pair of tappet bodies and engages mutually inclined guide surfaces thereon so as to prevent rotation of the tappet assemblies relative to the block.

4,207,776

ADJUSTABLE EMERGENCY FAN BELT

Raymond E. Helt, Pocatello, and Stanley M. Davis, Salmon, both of Id., assignors to Rass, Inc., Pocatello, Id.

Filed Jan. 23, 1978, Ser. No. 871,641

Int. Cl.[2] F16G *12/40*

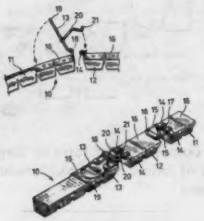
U.S. Cl. 74—235 **6 Claims**

1. An emergency fan belt assembly providing adjustable belt sizes, comprising in combination:

a main belt, in a fan belt assembly with a clamp lock and spaced receiving hooks disposed at opposite ends thereof; said clamp lock being moveably attached to said main belt for securing to said spaced receiving hooks, and said clamp lock comprising a lever bar rotatably attached about a laterally-extending axis to one end of said main belt, and clamp means extending rotatably outwardly from said bar for securing in said receiving hooks.

at least one extension belt link having a receiving hook and an attachment ring attached respectively at opposite ends of said link for attachment to an end of said main belt; and

a perpendicularly extending member comprising means



attached to said clamp means for insertion between said spaced receiving hooks for holding said clamp lock and attachment ring laterally in place with respect to said receiving hooks.

4,207,777

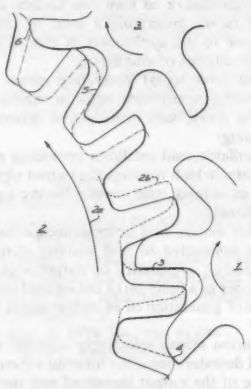
ONE WAY GEAR TRAIN

Werner Fluehmann, Hessigkofen, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere Mangagement Services S.A., Switzerland

Filed Nov. 7, 1978, Ser. No. 958,470

Int. Cl.[2] F16H *55/06*

U.S. Cl. 74—462 **7 Claims**



1. A gear train comprising a drive gear having asymmetric teeth, a driven gear having asymmetric teeth arranged and adapted to mesh with the teeth of the drive gear and an idler having asymmetric teeth arranged and adapted to mesh with the teeth of the driven gear the idler having the form of a reflection about a diameter of the drive gear whereby one sense only of rotation and one direction of transmission can occur.

4,207,778

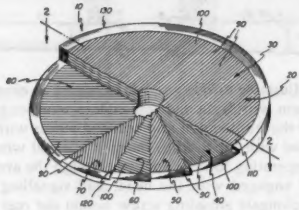
REINFORCED CROSS-PLY COMPOSITE FLYWHEEL AND METHOD FOR MAKING SAME

Burton D. Hatch, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 753,600, Dec. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 706,896, Jul. 19, 1976, Pat. No. 4,102,221. This application Oct. 30, 1978, Ser. No. 955,830

Int. Cl.[2] G05G *1/00, 3/00*

U.S. Cl. 74—572 14 Claims



1. A circumferentially reinforced cross-ply composite flywheel comprising:

(A) a cross-ply composite central portion comprising a plurality of fiber-containing layers, the fibers of each layer being parallel to each other and extending in radial and chordal directions and being disposed in a matrix of binder material, the fibers of each successive layer being oriented at a single predetermined angle of between approximately 70° and approximately 110° to the fibers of the preceding adjacent layer such that at least four of the fibercontaining layers are disposed between any two layers in which the fibers of both such layers extend substantially parallel to each other, and

(B) load transfer means for radially outward transfer of centrifugal loading from the radially outermost chordal fibers of each layer of said central cross-ply composite portion, said load-transfer means being an outer rim portion contiguous with said cross-ply composite central portion and of an axial thickness at least as great as that of said central portion, said outer rim portion comprising a multiplicity of circumferentially extending fibers disposed in a matrix of binder material, the density-to-stiffness ratio of said rim portion being substantially less in value than the density-to-stiffness ratio of said cross-ply composite central portion.

4,207,779

CONNECTING ROD FOR AXIAL CYLINDER-TYPE RECIPROCATING PISTON ENGINE

Hermann Papst, D-7742 St. Georgen, Schwarzwald, Fed. Rep. of Germany

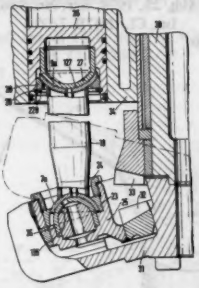
Filed Feb. 2, 1978, Ser. No. 874,501

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1977, 2704150; Sep. 6, 1977, 274006

Int. Cl.[2] G05G *1/00;* F16J *1/14;* F02B *75/32*

U.S. Cl. 74—579 R 14 Claims

1. A connecting rod for an axial cylinder-type reciprocating piston engine which includes a wobble ring, a first spherical bearing means provided at the wobble ring, and a second spherical bearing means provided at the piston of the engine, characterized in that a sheet metal tubular shaft is provided, hollow sheet metal spherical shells are welded at respective ends of said tubular shaft, each of said hollow spherical shells including inner and outer spherical surfaces, the inner spherical surfaces extend radially outwardly with respect to a longitudinal axis of the tubular shaft beyond the respective ends of the tubular shaft and are adapted to respectively cooperate with the first and second bearing means, a pair of retaining ring means are provided for releasably connecting the respective spherical shells to the piston and wobble ring, and in that each of said retaining ring means includes spherical surfaces cooperable with the respective outer spherical surfaces of the hollow spherical shells.



4,207,780

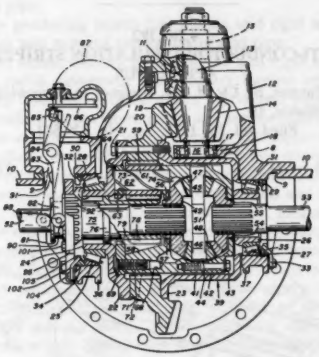
MULTI-SPEED PLANETARY DRIVE AXLE ASSEMBLY

Floyd G. Saxton, Rochester, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 709,447, Jul. 28, 1976, abandoned. This application Feb. 13, 1978, Ser. No. 876,962

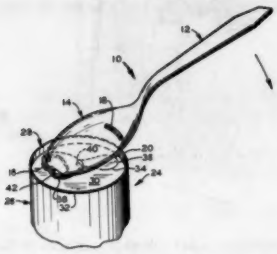
Int. Cl.[2] F16H *1/44*

U.S. Cl. 74—710.5 6 Claims



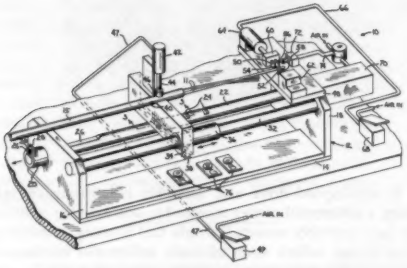
1. A multi-speed drive axle assembly comprising an axle housing, a differential carrier mounted to said housing, a differential case rotatably mounted within said housing, a differential mechanism within said case, said differential mechanism interconnecting oppositely extending drive axle shafts and including a gear support rotatably mounted within said differential case, a plurality of planetary gears rotatably mounted on said support, said planetary gears being constantly meshed with an internal ring gear rigid with said differential case, a sun gear concentric with one of said drive axle shafts and axially slidable relative thereto, said sun gear being constantly meshed with said planetary gears, means for locking said sun gear against rotation relative to said axle housing in one axial position of said sun gear, means for locking said sun gear for rotation with said gear support in a second axial position of said sun gear, a yoke connected to said sun gear and pivotally mounted for selectively moving said sun gear from either of said axial positions to the other axial position and a fixed abutment on said differential carrier limiting axial movement of said yoke in the direction of said differential mechanism to prevent said sun gear from contacting said differential mechanism.

4,207,781
CONTAINER OPENING DEVICE
Philip R. Greenwood, 825 Lorain St., Toledo, Ohio 43607
Filed Aug. 23, 1978, Ser. No. 936,110
Int. Cl.[2] B67B 7/00
U.S. Cl. 81—3.46 R 4 Claims



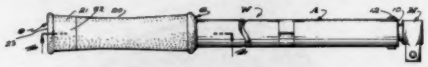
1. A device for opening a container having a ring-type opening tab which is attached to a removable section located on one end panel of the container wherein said device comprises:
- a main body portion having a generally curved surface for engagement with the one end panel of the container;
- a handle extending in one direction from said main body portion; and
- a projection extending in an opposite direction of said handle and extending from said main body portion for engaging the opening tab of the panel of the container.

4,207,782
MULTI-CONDUCTOR INSULATION STRIPPING APPARATUS
Cloyd C. Farmer, St. Cloud, Fla., assignor to Brunswick Corporation, Skokie, Ill.
Filed Jul. 31, 1978, Ser. No. 929,841
Int. Cl.[2] H02G 1/12
U.S. Cl. 81—9.51 21 Claims



1. Apparatus for stripping insulation from each insulated conductor in a multi-conductor wiring harness, comprising:
- a frame;
- a setup bar extending across said frame;
- a clamp positioned along said setup bar;
- means, including plural indentations along said setup bar each adapted to receive said clamp, for locking said clamp at a preselected point along said setup bar;
- means for holding said harness against said clamp;
- a movable cutting blade mounted with said frame so as to cut in a direction substantially transverse to said setup bar;
- means for moving said blade along said cutting direction through said insulation of one of said conductors; and
- means for driving said setup bar away from said blade while said blade is in engagement with said insulation, so as to simultaneously force said clamp away from said blade to thereby strip said insulation from said conductor.

4,207,783
TORQUE WRENCH
Bosko Grabovac, Mission Viejo, Calif., assignor to Consolidated Devices Inc., Industry, Calif.
Filed Apr. 14, 1978, Ser. No. 896,342
Int. Cl.[2] B25B 23/14
U.S. Cl. 81—52.5 4 Claims

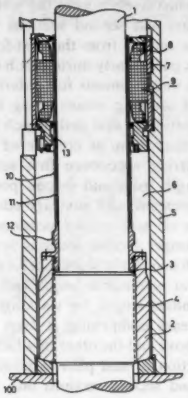


1. An adjustable torque wrench including an elongate, tubular lever arm with front and rear ends, a work-engaging head carried by the front end of said arm and means within the arm and coupled with the head to transmit a signal when a predetermined operating force is applied through the arm and head into work engaged with the head; said signalling means includes an elongate adjusting screw within the rear portion of the arm and shiftable longitudinally therein upon rotation thereof to adjust said operating force; and, operating means for said adjusting screw including a polygonal driver on the screw, an elongate drive sleeve with front and rear ends shiftable axially forward to a normal position substantially wholly within the arm and shiftable axially rearwardly to an actuated position where it projects from the arm, said sleeve has a polygonal opening in which said driver is slidably engaged when the sleeve is in its actuated position and an enlarged opening in which the driver is normally positioned, an elongate hand-grip including a rear section at the rear end of the sleeve to normally occur adjacent the rear end of the arm and having a forwardly projecting skirt portion normally surrounding the rear end portion of the arm, a tubular front section in fixed engagement about the rear portion of the arm forward of said skirt portion when the rear section is in its normal position, that portion of the sleeve which projects rearwardly from the arm when the sleeve is in its actuated position has longitudinally spaced calibrations corresponding with predetermined axial positions of the screw within the arm, said rear end of the arm defines a reference line for said longitudinally spaced calibrations on the sleeve, and means to releasably lock the rear section of the grip against rotation relative to the front section thereof when the rear section is in its normal position and including an extension projecting rearwardly from the front section and normally projecting into said skirt, radially inwardly and axially forwardly opening grooves in the annular skirt and longitudinally extending radially outwardly projecting splines on said extension and normally engaged in the grooves.

4,207,784
DEVICE FOR TURNING A NUT MEANS ON A SCREW BOLT
Gerhard Exner, and Volfango Festinori, both of Berlin, Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, MUM/u/ lheim, Fed. Rep. of Germany
Filed Feb. 16, 1978, Ser. No. 878,597
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1977, 2709592
Int. Cl.[2] B25B 21/00
U.S. Cl. 81—54 4 Claims

1. In combination:
- a nut;
- a lug assembled to the nut for driving it;
- means for rotating the lug and driving the nut onto or off of, a screw bolt;
- means for supporting the rotating means having an opening for passage of the screw bolt and the assembled lug and nut;

means including a counterthread connected to the support means for engaging the assembled lug and nut when the nut nears an end position and for retaining them when the nut is unscrewed from the bolt; and



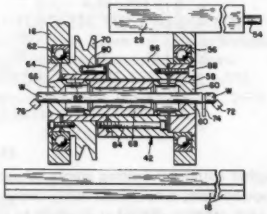
a threaded portion on the assembled lug and nut for engaging the counterthread.

4,207,785

DOUBLE END METAL TURNING

Howard A. Greis, and Robert F. Bruinsma, both of Holden, Mass., assignors to Kinefac Corp., Worcester, Mass.

Filed Oct. 23, 1978, Ser. No. 953,629
Int. Cl.[2] B23B *3/00, 3/16, 5/22*
U.S. Cl. 82—2 R **25 Claims**



1. A collet actuating apparatus comprising a support, a pair of coaxial rotary bearings in spaced relation in said support, a collet chuck in each bearing, a collet for each collet chuck, said collets facing in opposite directions and being axially spaced,

one of said bearings being axially fixed, the other of said bearings having an axial motion with respect thereto, and means to move the latter,

the movable bearing moving means moving its collet axially with respect to the fixed collet, causing the collets to close upon predetermined pressure applied to said movable collet chuck,

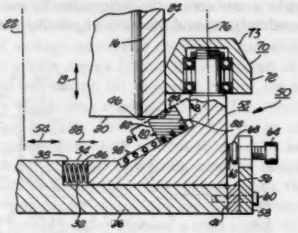
said collets being adapted to grasp work pieces between their ends, with the ends extending from the collets.

4,207,786

CAM FOLLOWER TOOL ARRANGEMENT

William H. Astle, Rancho Cordova, and John E. Pertle, Garden Valley, both of Calif., assignors to Tri Tool, Inc., Placerville, Calif.

Filed Jul. 3, 1978, Ser. No. 921,520
Int. Cl.[2] B23B *3/22*
U.S. Cl. 82—4 C **10 Claims**



1. In a pipe bevelling tool arrangement of the type in which the pipe having the end surface to be bevelled is stationary and the bevel cutter tool means for bevelling the pipe face orbits around the pipe, the improvement comprising, in combination:

mandrel means for detachably rigid engagement with the interior walls of the pipe;

rigid arm means rotatably mounted on said mandrel means and extending radially outwardly therefrom for rotation on said mandrel means about the nominal center line of said pipe;

motion producing means for rotating said rigid arm means about said nominal center line of said pipe;

support means slidably mountable on said rigid arm means for radial movement with respect thereto toward and away from said nominal center line of said pipe;

first resilient means intermediate said support means and said rigid arm means for yielding urging said support means in a radially inwardly direction toward said nominal center line of said pipe with a first predetermined resilient force;

cam means mounted on said support means and moving in said radial movement with said support means, and said cam means having a bearing surface thereof engaging the exterior surface of said pipe, and said first resilient means urging said bearing surface of said cam means into engagement with said exterior surface of said pipe;

bevel cutter tool means rigidly coupled to said support means moving in said radial movement therewith, and having a pipe cutting edge at a predetermined angle with said end surface of said pipe to thereby cut a predetermined bevel thereon.

4,207,787

SWATCH CUTTING SYSTEM

Michael Lewallyn, P.O. Box 1361, Dalton, Ga. 30720

Filed Aug. 10, 1978, Ser. No. 932,653
Int. Cl.[2] B26D *11/00*
U.S. Cl. 83—23 **5 Claims**

1. A swatch cutting apparatus for cutting swatches from a carpet strip and like sheet material, said apparatus comprising:

a plurality of spaced apart cutting blades concentrically mounted on a first rotatable shaft;

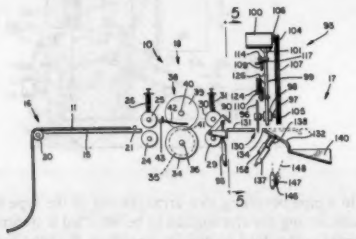
a grooved roll mounted on a shaft parallel to said first rotatable shaft and defining a plurality of spaced apart annular grooves, each said cutting blade alinged with and protruding into one of said plurality of grooves;

said plurality of cutting blades and said plurality of grooves cooperating to produce a slicing, scissor-like action with respect to a carpet strip moving therebewteen for making a plurality of parallel cuts along the length of the carpet strip;

a first pair of feed rolls positioned on one side of said grooved roll and said cutting blades for moving a carpet strip along its length and along a path first between said grooved roll and said cutting blades;

a second pair of feed rolls positioned on the other side of said grooved roll and said cutting blades for moving the longitudinally cut carpet strip further along its path away from said grooved roll and said cutting blades;

a cross cut blade mounted on a third rotatable shaft for movement along a rectilinear path across the carpet path to make a cut across the longitudinally cut carpet strip perpendicular to said plurality of parallel cuts;



clamp means positioned between said second pair of feed rolls and said cross cut blade for intermittantly holding the cut carpet strip stationary as said cross cut blade cuts across the longitudinally cut carpet strip;

a drop plate positioned after said cross cut blade along the path of the longitudinally cut carpet strip for receiving the end of the longitudinally cut carpet strip, said drop plate including means responsive to the movement of said cross cut blade across the longitudinally cut carpet strip for tilting said drop plate and for discharging the swatches of carpet from the drop plate.

4,207,788

APPARATUS FOR SEVERING AND STACKING PHOTOGRAPHIC PRINTS OR THE LIKE

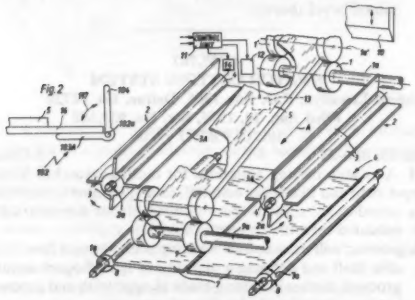
Bruno Regele, Münich, Fed. Rep. of Germany, assignor to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 782,339, Mar. 29, 1977, abandoned. This application May 16, 1978, Ser. No. 906,606

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1976, 2614038

Int. Cl.[2] B65H *29/34*

U.S. Cl. 83—89 **13 Claims**



1. Apparatus for subdividing a web into a succession of discrete shorter first sheet-like sections of predetermined uniform length and longer second sheet-like sections, particularly for subdividing an exposed and developed flexible strip of photographic material into discrete prints which constitute said first sections and strip portions which are to be segregated from prints and are longer than the prints and constitute said second sections, comprising means for advancing a web lengthwise in a predetermined direction along a predetermined path; severing means adjacent a first portion of said path and operable to cut transversely across the web to subdivide the latter into said first and second sections by separating the foremost sheet-like section from the next-following sheet-like section of the web, particularly during each interval of idleness of said advancing means; means for orderly stacking of said first sections, said stacking means being located at a level below a second portion of said path which is disposed downstream of said first portion, as considered in said direction; means for transferring successive first sections of uniform predetermined length from said second portion of said path onto said stacking means; and auxiliary advancing means located downstream of said second portion of said path for transporting the longer second sections beyond said second portion of said path in order to segregate sections whose length exceeds a maximum permissible length and retain sections of uniform predetermined length for stacking purpose, each of said advancing means comprising at least two rolls one of which is located above and the other of which is located below the respective portion of said path to positively engage and entrain the first and second sections into and to positively engage and entrain the second sections beyond said second portion of said path.

4,207,789

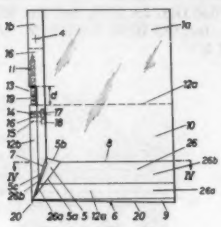
ANGLED CUTTER

Simon Bleich, 29, Gassergasse, A-1050 Vienna, Austria

Continuation of Ser. No. 852,617, Nov. 18, 1977, abandoned. This application Jan. 12, 1979, Ser. No. 3,469

Int. Cl.[2] B26D *1/06, 7/26*

U.S. Cl. 83—697 **1 Claim**

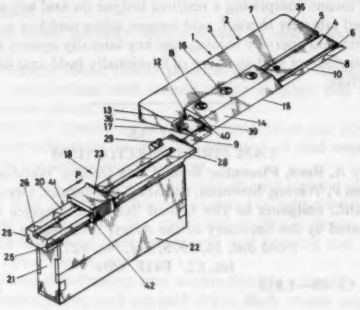


1. An angled cutter for cutting stacks of paper, comprising two flat blade holders, means detachably connecting said blade holders to each other to extend at an angle to each other, each of said blade holders having in the lower portion of its outside surface a recess, a flat blade vertically adjustably mounted and fixed in an adjusted position in each said recess, the lower end of said blade and the lower end of said blade holder jointly forming a planar tapered surface which extends from a cutting edge on the outside of the blade to the inside surface of the blade holder, said tapered surfaces of both blade holders and of the blades inserted therein being increasingly greater from the joint between said blade holders and between said blades to the ends of said blades remote from said joint, each said blade being increasingly ground off at its cutting edge from the corner between said blades so that a facet is formed which defines a cutting edge which is slightly upwardly inclined toward said corner.

4,207,790
KNIFE HOLDER FOR MICROTOMES

Hidetoshi Endo, Seki, Japan, assignor to Feather Kogyo Kabushiki Kaisha, Mino, Japan

Filed Dec. 4, 1978, Ser. No. 966,043
Claims priority, application Japan, Dec. 6, 1977, 52-146478
Int. Cl.[2] B26D 7/26; G01N 1/06
U.S. Cl. 83—698 5 Claims



1. A knife holder comprising:

a base plate of a substantially wedge-shaped cross-section having a first sharpened edge, said base plate having a stepped surface that extends along said first sharpened edge and on which a knife is locatable with its blade extending beyond said first sharpened edge, said base plate having a groove extending parallel to and remotely from said stepped surface;

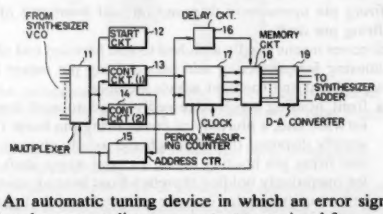
a holder plate having a second sharpened edge and a flat surface extending along said second sharpened edge and facing to said stepped surface in spaced relation for sandwiching the knife between said flat and stepped surfaces, said holder plate having a leg located remotely from said second sharpened edge and disposed in said groove in the base plate; and,

a plurality of screws spaced from each other and extending through said holder plate threadedly into a portion of said base plate which lies between said groove and said stepped surface.

4,207,791
AUTOMATIC TUNING DEVICE

Keiji Murakami, Okegawa, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Filed Jun. 16, 1978, Ser. No. 916,074
Claims priority, application Japan, Jun. 25, 1977, 52-75918; Aug. 8, 1977, 52-94793
Int. Cl.[2] G10H 1/02
U.S. Cl. 84—1.01 3 Claims



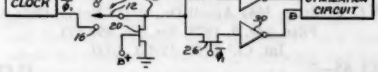
1. An automatic tuning device in which an error signal is produced corresponding to an output tone signal from a voltage controlled oscillator and added to the input thereto which comes from a keying circuit of an electronic musical instrument, for automatic tuning, the automatic tuning device comprising, a clock, a period measuring counter which is controlled to start counting the clock output when the output tone signal from the voltage controlled oscillator has reached a predetermined level for the first time after input of a start signal to generate a control signal when the counting has reached a preset value and to stop the counting of the clock output when the output tone signal from the voltage controlled oscillator has reached a predetermined level for the first time after the generation of the control signal, the count value of the period measuring counter at the time of stopping the counting is converted into an analog form to provide the error signal.

2. An automatic tuning device in which an error signal is produced corresponding to an output tone signal from each of a plurality of voltage controlled oscillators and added to the input thereto which comes from a keying circuit of an electronic musical instrument, for automatic tuning, the automatic tuning device comprising a selector circuit for selecting from tone signal inputs from the plurality of voltage controlled oscillators a tone signal of an address assigned by an address counter; a clock, a period measuring counter which is controlled to start counting the clock output when the output signal from the selector circuit has reached a predetermined level for the first time after input of a start signal, to generate a control signal when the counting has reached a preset value and to stop the counting of the clock output when the output signal from the selector circuit has reached a predetermined level for the first time after the generation of the control signal; and a memory circuit for storing the count value of the period measuring counter at the time of stopping the counting at an address assigned by the address counter, the count value stored in the memory circuit being converted into an analog form to provide an error signal of a designated one of the voltage controlled oscillators.

4,207,792
TRI-STATE ENCODING CIRCUIT FOR ELECTRONIC MUSICAL INSTRUMENT

William R. Hoskinson, Elburn, Ill., assignor to The Wurlitzer Company, DeKalb, Ill.

Filed May 10, 1979, Ser. No. 37,687
Int. Cl.[2] G10H 1/00; H03K 17/60, 19/08
U.S. Cl. 84—1.01 13 Claims



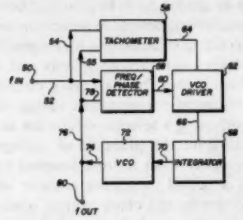
1. In an electronic musical instrument having player operable control means movable by the player and capable of assuming one of a plurality of control positions, a tri-state encoder circuit for producing a digitally encoded output signal corresponding to the relative position of the movable control means, said tri-state encoder circuit comprising: a first signal source for producing a first signal of predetermined frequency and duty cycle at a first one of said control positions and a second signal at a second one of said control positions, said second signal bearing a predetermined phase relationship with respect to said first signal, means for producing a predetermined signal level on the movable control means when moved to a third one of said control positions, said movable control means thereby carrying a signal whose frequency and phase relationships correspond to the position of the movable control means relative to said control positions, and output circuit means for detecting the signal on said movable control means and producing therefrom said digitally encoded output signal corresponding to the relative position of the movable control means.

4,207,793

VARIABLE RATE PORTAMENTO SYSTEM

Anthony C. Ippolito, North Tonawanda, and William R. Hoskinson, Williamsville, both of N.Y., assignors to The Wurlitzer Company, DeKalb, Ill.

Filed Feb. 22, 1977, Ser. No. 770,412
Int. Cl.[2] G01R 23/12, 25/04; G10H 1/02
U.S. Cl. 84—1.24 19 Claims



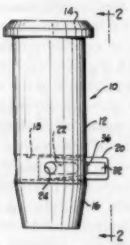
1. In an electronic musical instrument, including means for selectively producing a plurality of signals comprising a plurality of voices of a note being played, a portamento system comprising: a voltage controlled oscillator for producing a first input signal at a first frequency, said electronic musical instrument producing a second input signal at a second frequency, said second input signal comprising one of said voices, an oscillator control circuit connected to said voltage controlled oscillator and to said electronic musical instrument to receive said first and second input signals and to produce a control voltage in response thereto, said control voltage varying in accordance with the frequency difference between said first and second input signals so as to increase when the second frequency is greater than the first frequency and decrease when the first frequency is greater than the second frequency and being fed back to said voltage controlled oscillator for varying the frequency of said first input signal in the direction of said second frequency at a predetermined rate, said oscillator control circuit including means for controlling and for selectively varying said predetermined rate so that the varying frequency first signal is usable for producing an audible portamento effect of selectable rate until said first input signal becomes substantially equal in frequency with said second frequency.

4,207,794

KEY BOLT

Frank C. Collister, 3641 Appell Dr., Port Clinton, Ohio 43452

Filed Apr. 5, 1978, Ser. No. 893,571
Int. Cl.[2] F16B 19/00, 3/00
U.S. Cl. 85—7 13 Claims



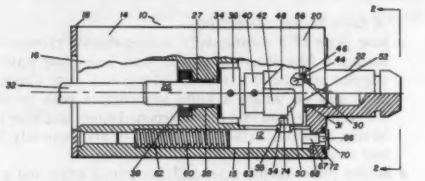
1. A key bolt including a shank having a bolt head on one end thereof an aperture extending transversely in said shank in spaced relation from said head, a key disposed in said aperture and adapted for lengthwise sliding relation relative thereto and from a locking position wherein it projects exteriorly of said aperture to a retracted position wherein it is disposed in said aperture substantially within the confines of said shank, and vice versa, and means coacting between said key and the defining surface of said aperture for retaining said key in selected lengthwise positional relation in said aperature and wherein said key is of generally rectangular bar-shaped configuration, said aperture being of generally circular configuration, said key being of such vertical dimension so as to be receivable in generally snug but lengthwise sliding relation in said aperture, said means comprising a resilient tongue on said key and being biased laterally thereof, said tongue when said key is disposed within said aperture forcing said key laterally against the defining surface of said aperture of frictionally hold said key in said aperture.

4,207,795

CAM FIRING MECHANISM

Jerry A. Reed, Placentia; Ronald Van Delden, Woodlake; Winfred F. Waring, Stockton, and Shuji U. Maruko, Orange, all of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 24, 1978, Ser. No. 927,714
Int. Cl.[2] F41F 3/04
U.S. Cl. 89—1.813 2 Claims



1. A cam firing apparatus for sequentially initiating projectiles in a multitube launcher which comprises;

a housing having a partially closed rear end, a forward end, a central axially positioned central drive shaft bore, and a plurality of diametral longitudinally positioned firing pin housing bores disposed therein;

biased firing pin assembly means operatively disposed in each of said firing pin housing bores for successively firing projectiles in said multitube launcher which includes;

a firing pin shaft having a rear end and a front end, said shaft slidably disposed in a longitudinally positioned firing pin housing bore;

a helical spring biasedly positioned on said firing pin shaft rear end, said helical spring urging said firing pin assembly means toward said seal cover means,

a follower pin transversely fixedly positioned in said firing pin shaft;

a cylindrically shaped cam follower member rotatably positioned on said follower pin and in contact with a forward end of said cam means; and

a firing pin operatively disposed on said front end of said firing pin shaft;

seal-cover means fixedly attached to said forward end of said housing for protecting said biased firing pin means from an ambient environment which includes;

a front housing cover screwedly fixed to said housing forward end, a plurality of cover firing pin bores transversely disposed therethrough and axially aligned with said firing pin housing bores, an axial cover shaft bore for operatively holding therein a front bearing member, and a cover annular counter groove in axial alignment with said cover firing pin bore; and

a cover seal fixedly disposed in said cover annular counter groove, said cover seal adapted to allow said firing pin to penetrate therethrough when a biased firing pin assembly is initiated;

drive shaft means axially rotatably supported in said central

drive shaft bore of said housing and in said seal-cover means for providing torque to said cam firing apparatus which includes;

a connecting shaft rotatably axially disposed in said bearing means and in said housing;

a first collar member fixedly pinned to said connecting shaft;

a thrust washer operatively disposed intermediate said housing and said first collar member, said thrust washer preventing rearward longitudinal movement of said connecting shaft;

a second collar member fixedly pinned to said connecting shaft;

a cam bearing sleeve axially positioned on said connecting shaft intermediate said second collar member and said seal-cover means; and

a plurality of equally spaced cam lifting pivot pin rollers transversely press fit into the rear end of said bearing sleeve and said connecting shaft;

bearing means operatively disposed in said central drive shaft bore, in said seal-cover means and on said drive shaft means for reducing the rotational frictional forces between said drive shaft means and said housing and said seal cover means; and

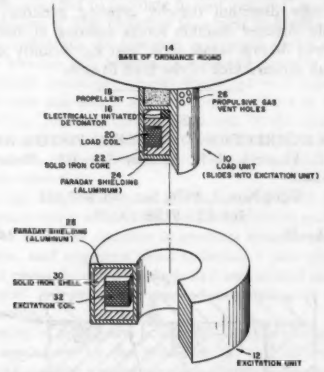
double-lobe free-floating cam means slidably rotatably and operatively disposed on said drive shaft means and in contact with said biased firing pin assembly means, said cam means having forward and rear cam ends adapted to simultaneously cock and sequentially release a biased firing pin assembly without incurring a "hang-fire" condition.

4,207,796

ORDNANCE INDUCTION FIRING SYSTEM

Frederick E. Warnock, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 20, 1974, Ser. No. 481,428
Int. Cl.[2] F42B 9/08
U.S. Cl. 89—28 R **9 Claims**



1. An ordnance induction firing device disposed about the base of a projectile of the type launched from a tube, comprising:

excitation means mounted inside the tube, comprising:

an excitation coil;

a solid excitation shell of a magnetic material surrounding all but the interior circumferential surface of the excitation coil; and

a first metallic shield enclosing the excitation means;

load means external to but associated with the base of the projectile, slidably positionable inside and adjacent to but separated by an air gap from said excitation means, for detecting the magnetic flux produced by the excitation means and providing an electric current upon rapid change of said magnetic flux, comprising:

a solid load core of a magnetic material;

a load coil wound about the solid load core;

a squib coupled across the load coil;

a propellant for causing the removal of the load means from inside the excitation means, disposed about the squib; and

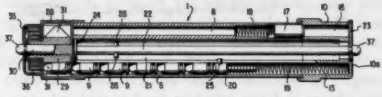
a second metallic shield completely enclosing the load means, the squib, and the propellant.

4,207,797

MAGAZINE FOR AN AUTOMATIC WEAPON

Joseph J. Györik, 3043 15th St., N.W., Washington, D.C. 20009

Filed May 22, 1979, Ser. No. 41,471
Int. Cl.[2] F41C 25/06
U.S. Cl. 89—34 **7 Claims**



1. A magazine for an automatic weapon comprising in combination:

(a) means defining a plurality of stationary storage chambers arranged in a circular array about a longitudinal magazine axis and extending parallel thereto; each said storage chamber being adapted to receive cartridges in an end-to-end contacting series;

(b) loading means for providing access to said storage chambers at a rear end of the magazine;

(c) separate follower springs arranged to extend into each storage chamber for urging the cartridges therein towards a front end of the magazine;

(d) a feeding gate arranged at said front end of the magazine; and

(e) feeding means for advancing the cartridges from said storage chambers to said feeding gate; said feeding means including

(1) a feeding wheel mounted at said front end of the magazine for rotation about said axis with respect to said storage chambers; said feeding wheel being divided into feeding chambers, each repeatedly communicating with each said storage chamber upon rotation of said feeding wheel for receiving a cartridge therefrom; said feeding gate being arranged to successively communicate with said feeding chambers upon rotation of said feeding wheel for sequentially receiving cartridges therefrom;

(2) a power spring connected with said feeding wheel for exerting a torque thereon; and

(3) means for manually winding said power spring.

4,207,798

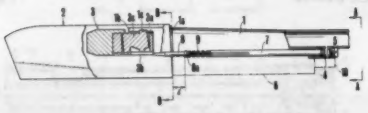
GAS OPERATING SYSTEM FOR LOADING SHOT SHELL IN AN AUTOMATIC GUN

Hisao Hayashi, Tokyo, Japan, assignor to Kabushiki Kaisha Kawaguchiya Hayashi Juho Kayaku-Ten, Tokyo, Japan

Filed Nov. 10, 1977, Ser. No. 850,202
Claims priority, application Japan, Nov. 16, 1976, 51-137581; Dec. 29, 1976, 51-159849; Dec. 29, 1976, 51-177680[U]
Int. Cl.[2] F41D 5/10
U.S. Cl. 89—191 R **2 Claims**

1. A gas operating device for loading a shot shell in an automatic gun comprising a receiver housing having a forward end surface facing in the direction in which the gun is fired, a breech block mounted in said receiver housing and being movably positionable therein between a locked position and a released position with the locked position being closer to the forward end surface than the released position, a gunbarrel

secured to and projecting from the forward end surface of said receiver housing in the firing direction of the gun, an axially extending action bar mounted on the exterior of said gunbarrel and extending into said receiver housing in contact with said breech block in the locked position, said action bar arranged to be displaced by the gas pressure generated at the firing of a shot shell in the gun for displacing said breech block from the locked position into the released position, wherein the improvement comprises a cylinder mounted on the exterior of said gunbarrel and spaced forwardly of said receiver housing, said cylinder disposed in communication with said gunbarrel for receiving gas pressure therefrom when the shot shell is fired, a guide hole formed in the forward end surface of said receiver housing and extending therefrom to the locked position of said breech block, said action bar having a forward end positioned in said cylinder and a rearward end in said hole in



contact with said breech block in the locked position, said action bar being axially movable so that the gas pressure in said cylinder moves said action bar in the rearward direction against said breech block for displacing said breech block into the released position, stop means are located on said action bar for limiting the rearward movement of said action bar into said receiving housing, said action bar comprises a first action bar and a second action bar in coaxial alignment with said first action bar, each of said first and second action bars having a first end and a second end, the first end of said first action bar is located in said cylinder, the second end of said second action bar is located in said receiver housing, the second end of said first action bar and the first end of said second action bar being movable relative to one another and spring means are mounted between said first and second action bars for transmitting the force of the gas pressure within said cylinder over said first and second action bars to said breech block.

4,207,799

MUZZLE BRAKE

Charles T. Tocco, 21908 Dequindre, Lot 35, Warren, Mich. 48091

Continuation of Ser. No. 768,072, Feb. 14, 1977, abandoned. This application Oct. 10, 1978, Ser. No. 949,416

Int. Cl.[2] F41C *21/18*

U.S. Cl. 89—196 **13 Claims**

1. A muzzle brake for use on an associated gun having gun body means, a gun barrel with a bore formed in said barrel and a gun slide surrounding said barrel and axially movable relative to said barrel, said muzzle brake comprising:

a tubular cylindrical body member having an internal passage, said internal passage having one end portion and an opposite end portion with a shoulder portion therebetween, said one end portion and said opposite end portion of said internal passage having an internal diameter of substantially constant diametral dimension and being slightly greater than the diameter of said barrel, said shoulder portion having an internal diameter slightly greater than the diameter of said barrel;

securing means for detachably securing said tubular cylindrical body member to said gun slide as to place said tubular cylindrical body member in substantial axial alignment with said barrel bore, said cylindrical body member when detachably secured to said slide having said one end portion received within said slide as to be axially movable therewith and as to have said opposite end portion projecting outwardly of said slide in substantial axial alignment with said barrel bore;

abutment means carried generally externally of and by said cylindrical body member, said abutment means being effective to operatively engage an end of said slide as to limit the axial extent to which said one end portion is received by said slide when said cylindrical body member is detachably secured to said slide;

said shoulder portion having bearing surface means axially interposed said one and said opposite end portion, said bearing surface means slidably receiving said barrel therein when said cylindrical body is detachably secured to said slide; and

venting aperture means formed through the wall of said tubular cylindrical body member, said aperture means comprising an elongated slot having one end and a longitudinal axis substantially parallel to the axis of said tubular cylindrical body, said elongated slot being located ahead of the forward end of said barrel such that said barrel end is interposed said shoulder portion of the internal passage and said one end of the elongated slot, said elongated slot further being upwardly disposed and further having said longitudinal axis generally contained within a vertical plane passing through said axis of the barrel when said gun is held in a generally horizontal firing position, such that when said gun is fired, the gasses generated during the ignition of a related bullet assembly may freely escape the end of said barrel, unrestricted by the structural relationship established between said barrel and said opposite end portion of said tubular cylindrical body member toward said elongated slot and pass therethrough in a generally upwardly direction thereby creating generally downwardly directed reaction forces assisting in maintaining the fired firearm stable to at least significantly minimize the full upward kick of the fired firearm.

4,207,800

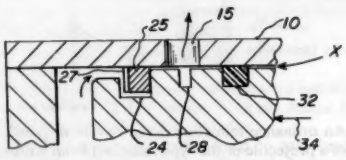
SINGLE DIRECTIONAL SEALING PISTON RING

Kenneth C. Homuth, 9149 Meadowview Rd., Bloomington, Minn. 55420

Filed Nov. 2, 1978, Ser. No. 957,013

Int. Cl.[2] F15B *15/22*

U.S. Cl. 91—26 **14 Claims**



1. An improvement in hydraulic cylinder and piston and piston ring construction, including a cylinder having respective oil ports in a side wall proximate the cylinder ends and a piston having a plurality of piston rings, wherein the improvement comprises:

(a) a pair of piston ring grooves in said piston, each of said grooves having a predetermined width and substantially vertical side walls, said grooves located on said piston such that at least one of said side walls in a groove is

between a respective oil port and cylinder end when said piston is at a respective extreme stroke position; and

(b) a piston ring in each of said grooves, said ring having a width narrower than said groove width and having respective edge faces facing said groove side walls, the edge face facing the groove side wall closest to said cylinder end having a plurality of oil flow channels crossing said edge face.

4,207,801

HYDRAULIC OSCILLATORY DEVICES

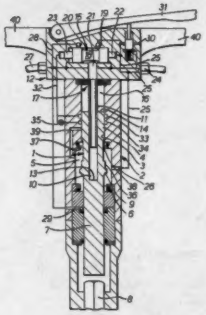
Lionel A. Reynolds, Stroud, England, assignor to A. F. Hydraulics Limited, Chequers Bridge, England

Continuation of Ser. No. 626,556, Oct. 28, 1975, abandoned. This application Nov. 8, 1977, Ser. No. 849,719

Claims priority, application United Kingdom, Nov. 14, 1974, 49232/74

Int. Cl.² F01L *25/06*; F01B *7/18*

U.S. Cl. 91—278 **4 Claims**



1. A hydraulically operated oscillatory device comprising:

a housing defining a cylinder

a piston arranged to oscillate in said cylinder, said housing containing a first chamber in which hydraulic pressure acts to displace the piston in a forward stroke direction, said housing also containing a second chamber in which hydraulic pressure operates the piston in a return stroke direction and which is continuously subject to hydraulic working pressure during operation of the device, said housing further containing a third chamber the volume of which increases as said piston moves in said forward stroke direction,

a one-way valve connected to exhaust said third chamber,

a sequence valve which controls pressurization and exhausting of said first chamber to produce reciprocation of the piston, said sequence valve including a pilot piston, said pilot piston being movable to first and second positions to control the pressurization and exhausting of said first chamber,

a plurality of pilot ports positioned in said cylinder so as to be uncovered by the piston at the end of each return stroke to allow a sequence valve actuating flow of hydraulic fluid from said second chamber through at least one of said ports to said pilot piston located at one end of said sequence valve, said fluid forcing said pilot piston from a first position to a second position to thereby cause stroke reversal of said piston, the last port to be uncovered during the return stroke of said piston being directly connected to said sequence valve, and said last port being uncovered at the end of each forward stroke of the piston to connect that port to the third chamber and exhaust said pilot piston, and

a valve means connected between each other of said pilot ports and said sequence valve for selectivity and individually rendering operative said separate pilot ports.

4,207,802

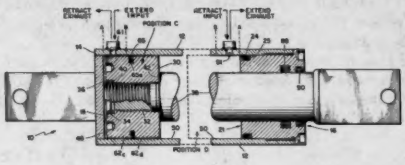
HYDRAULIC CYLINDER WITH IMPROVED DASHPOT AND PORTING

Kenneth C. Homuth, 1885 E. Old Shakopee Rd., Bloomington, Minn. 55437

Filed Apr. 5, 1978, Ser. No. 893,284

Int. Cl.² F15B *15/22*

U.S. Cl. 91—405 **5 Claims**



1. In a hydraulic cylinder and piston combination which includes a piston and cylinder and has respective hydraulic flow ports proximate the cylinder ends, the improvement comprising each of said ports having a respective predetermined cross sectional area and being positioned in a cylinder side so as to become at least partially blocked by the piston having a pattern of off-axis inclined grooves extending around the piston bearing surface circumference such that at least several of said grooves are in open and direct flow communication with a respective port as the piston at least partially blocks the respective port; and a circumferential groove about said piston intersecting said pattern along a circumferential line located such that said respective port is intermediate said line and one of said cylinder ends when said piston is at said piston stroke end, the circumferential groove providing flow communication between all of said off-axis inclined grooves, whereby hydraulic damping of said piston and piston stroke reversal is provided.

4,207,803

STOPPING DEVICE FOR DOUBLE-ACTING, PNEUMATIC OPERATING CYLINDERS

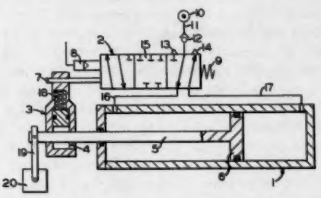
Helmut Göpρeə πβə Δγ ÷ δ ≃σαρə αββερ <ΦΞ βρεζβ ≃σπ~ə ~αρəə Δγ ÷ δ ≃σαρ

Filed Jan. 30, 1978, Ser. No. 873,339

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1977, 2707419

Int. Cl.² F15B *13/16, 12/044*

U.S. Cl. 91—410 **6 Claims**



1. A positioner device for use with a double-acting, pneumatic operating cylinder having a piston and piston rod connectable to a member to be positioned thereby, characterized by a reversing valve device in the form of a non-lapping two-way valve for selectively communicating a source of pneumatic pressure with one side or the other of said piston and thereby determining the position thereof and of said member, said reversing valve device having a blocking portion effective, when in a blocking position, for blocking off communication between said source and said operating cylinder, and being fixedly attached to a locking device by means of an actuating rod, in which case the locking device, when subjected to

pneumatic pressure, occupies a freely sliding relation with said piston rod and, when relieved of such pneumatic pressure, locks onto said piston rod, so as to provide, in the direction of axial movement, a coupling between the piston rod and the locking device and, thus, also between said piston rod and the reversing valve device.

4,207,804

CRAWLER TYPE VEHICLE DRIVING APPARATUS

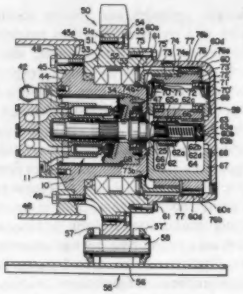
Kiyozumi Fukui, 1468-1, Goshono, Tarui-cho, Fuwa-gun, Gifu-ken, Japan

Continuation-in-part of Ser. No. 664,637, Mar. 8, 1976, abandoned. This application May 17, 1978, Ser. No. 907,043

Claims priority, application Japan, Mar. 14, 1975, 50-31517; Jul. 4, 1975, 50-82948; Jul. 10, 1975, 50-84648

Int. Cl.[2] **F01B** *13/04;* **B62D** *11/00*

U.S. Cl. 91—499 **17 Claims**



1. A crawler type vehicle driving apparatus, comprising in combination:

a motor housing; and

a hydraulic motor housed in said motor housing and including a rear casing having a pair of fluid passages provided therein, a timing plate integrally engaged with the front surface of said rear casing and having a pair of distributing passages in fluid communication with said fluid passages in said rear casing, a piston cylinder assembly operably mounted at the front surface of said timing plate and having an axis of rotation, an inclined plate operably mounted at the front surface of said piston cylinder assembly, an output shaft positioned along the axis of said piston cylinder assembly and rotated in unison with said piston cylinder assembly, a retaining member holding said rear casing and said inclined plate so as to permit said hydraulic motor to be easily removed and attached as a single unit from and into said motor housing, positioning means securely mounted on a peripheral portion of said inclined plate to provide desired relative positions of said motor housing and said inclined plate, a bearing positioned between said inclined plate and said output shaft for rotatably engaging said inclined plate with said output shaft, and a holding member for retaining said bearing in its predetermined position.

4,207,805

FEED BEAM

Nils G. Jonsson, Täby, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed May 9, 1978, Ser. No. 904,214

Claims priority, application South Africa, May 11, 1977, 77/2816

Int. Cl.[2] **B23Q** *5/033;* **E21C** *5/06;* **F15B** *11/16, 13/06*

U.S. Cl. 91—508 **23 Claims**

1. A feed beam for a rock drill comprising:

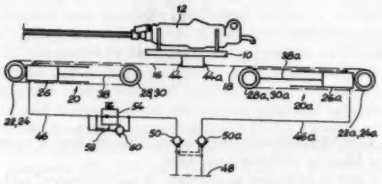
an elongated generally tubular main body (**13**),

elongate guide means (**11**) on said main body (**13**) and extending therealong,

a saddle (**10**) which is adapted to carry a rock drill (**12**) and which is mounted on the main body (**13**) to be moveable along said guide means,

a first power unit (**20**), means removably mounting said first power unit to one end of the main body, said first power unit extending into the generally tubular main body so that the generally tubular main body encloses at least a major portion of said first power unit, and a second power unit (**20***a*), means removably mounting said second power unit to the other end of the main body, said second power unit extending into the generally tubular main body so that the generally tubular main body encloses at least a major portion of said second power unit,

said first and second power units being substantially aligned and having a free space axially between them interior of the generally tubular main body,



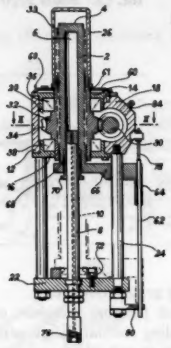
each of said first and second power units comprising a set of at least two fixed pulleys (**22,24**) at the respective end of said main body, a pressure fluid actuated jack (**26**), a set of at least two pulleys (**28, 30**) mounted within the generally tubular main body and operatively coupled to the jack (**26**) to be movable by the jack towards and away from the fixed pulleys (**22, 24**), a flexible member (**16** and **18**, respectively) passing over said fixed and movable pulleys, one end of the flexible member being immovably affixed to said respective power unit and the other end being attached to the saddle such that the flexible member of each power unit pulls the saddle along the feed beam when said jack expands, said first and second power units being arranged to pull the saddle in relative opposite directions, and means coupled to said power units and arranged to abut against the respective end of the main body (**13**) to transmit the reaction forces from the respective power units to the main body.

4,207,806

MINIATURE VOLUMETRIC PUMP

Jean-Pierre Bimond, Pau; Jean-Michel Etcheverria, Biarritz; Flavien Lazarre, Pau, and Andre Veron, Serres-Castet, all of France, assignors to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

Filed Jul. 26, 1978, Ser. No. 927,967
Claims priority, application France, Aug. 2, 1977, 77 23719
Int. Cl.[2] F04B *39/00*; F01B *13/02*
U.S. Cl. 92—31 2 Claims



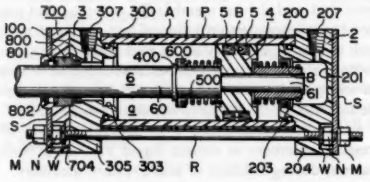
1. A pump, wherein the sleeve has a rotary sliding gauge at one end, co-operating with a pointer secured to the frame.

4,207,807

PLASTIC AIR CYLINDER ASSEMBLY

Yataro Takata, Fujisawa; Yukinori Takenoshita, Ebina; Kiyoshi Sasahara; Akira Shigaki, both of Fujisawa; Kazuo Hirai, Kamakura; Kosei Maeda, Yokohama; Hideo Tadokuro, Sagamihara, and Hirokazu Maeda, Yamato, all of Japan, assignors to Oiles Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 718,020, Aug. 26, 1976, abandoned. This application Aug. 31, 1978, Ser. No. 938,435
Claims priority, application Japan, Sep. 4, 1975, 50-121276[U]; Feb. 17, 1976, 51-16729[U]; Feb. 18, 1976, 51-15790[U]
Int. Cl.[2] F01B *29/00*
U.S. Cl. 92—128 6 Claims



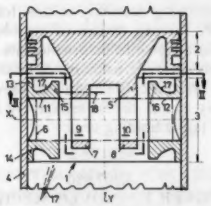
1. In an air cylinder assembly including a plastic cylinder tube, a plastic head cover mounted on one end of said cylinder tube and provided with a plurality of lugs each having a through-hole, a plastic rod cover mounted on the other end of said cylinder tube and provided with a plurality of lugs each having a through-hole aligned with a through-hole of said head cover, each of said two covers having inner and outer surfaces and the outer surfaces of each lug of said two covers having a radially enlarged recess for receiving a nut at its through-hole, a plastic piston slidable within said cylinder tube, and a piston rod connected to the piston and passing through an aperture of said rod cover; the improvement comprising: connecting means for tightly and resiliently connecting the head cover and the rod cover, the connecting means including a plurality of metal tie rods passing through the through-holes of said lugs of said head cover and said rod cover, an inside nut in each of said recesses in said lugs threadedly engaged with one of the tie rods, a resilient and compressible member in each of said recesses in said lugs interposed between each of said inside nuts and the lug, each of said resilient and compressible members being only partially compressed by the associated inside nut, each inside nut projecting outwardly slightly from the associated recess beyond the outer surface of the associated cover, a first supporting plate opposed to the outer surface of said head cover and engaging the inside nuts in the recesses of said head cover and being spaced from the outer surface of the head cover by the inside nuts, a second supporting plate opposed to the outer surface of said rod cover and engaging the inside nuts in the recesses of said rod cover and being spaced from the outer surface of the rod cover by the inside nuts, said tie rods extending through openings in said first and second support plates, and outside nuts threadedly engaged with each end of each tie rod, the outside nuts forcing the first and second supporting plates against said inside nuts whereby said plastic cylinder tube is permitted to expand more than said metal tie rods by further compressing said resilient and compressible members.

4,207,808

PISTON FOR RECIPROCATING INTERNAL COMBUSTION ENGINES, TYPICALLY DIESEL ENGINES

Ludwig Elsbett, and Günter Elsbett, both of c/o Industriestrabe 14, 8543 Hilpoltstein, Fed. Rep. of Germany

Filed Apr. 20, 1978, Ser. No. 898,152
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1977, 2717692
Int. Cl.[2] F16J *1/00*, *1/08*
U.S. Cl. 92—158 8 Claims

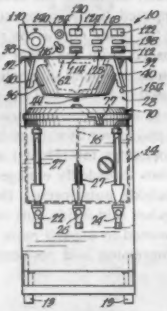


1. In a piston for reciprocating internal combustion engines, typically Diesel engines, having a generally cylindrical sealing section, piston sealing rings in grooves in said sealing section, said sealing section carries a crown of the piston, said crown of the piston having a base and depending legs extending through the sealing section with wrist pin openings in said legs, a generally cylindrical guide section spaced from and coaxial with the sealing section and surrounding said legs, wrist pin openings in said guide section, bearings in said opening, which piston is articulately jointed via the base and legs to a pin bearing of a connecting rod and to said guiding section serving to transmit normal forces due to the oblique position of the connecting rod, the improvement comprising an annular collar-shaped sliding shell on said guiding section, said collar-shaped shell defining a wall being located on the perimeter of said guiding section and extending around and supporting the region of the bearings of the wrist pin and at least one rib formed on said guiding section and associated with and reinforcing each bearing, said rib being in the shape of a chord connecting opposed portions of the annular sliding shell on opposite sides of the respective bearing.

4,207,809
DUAL RESERVOIR COFFEE URN

Frank D. Brill, Norridge, Ill., assignor to Restaurant Technology, Inc., Oak Brook, Ill.

Filed Mar. 20, 1978, Ser. No. 888,164
Int. Cl.[2] A47J *31/40, 31/50, 31/54*
U.S. Cl. 99—279 22 Claims



1. In a coffee brewing and serving machine in which hot water is dispensed in a downwardly flowing stream and which has a lower housing portion for receiving, holding and dispensing brewed coffee at a desired elevated temperature, the improvement comprising:

a tank within said lower housing portion, said tank having wall means dividing said tank into a plurality of liquid holding urns;

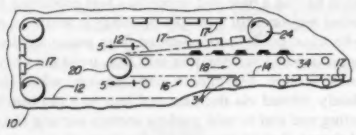
brewing and dispensing assembly means for holding a quantity of coffee under said downwardly flowing stream of hot water and for discharging a downwardly flowing stream of brewed coffee; and

diverter means mounted above said tank, below said brewing and dispensing assembly means, for redirecting said downwardly flowing stream of brewed coffee, said diverter means adapted to be oriented above said tank in at least as many positions as there are holding urns whereby the flow of brewed coffee from said brewing and dispensing assembly means can be selectively directed into any one of said liquid holding urns.

4,207,810
CUP AND COVER TURNOVER MECHANISM FOR ENGLISH MUFFIN GRIDDLES

Eugene M. Noel, 1215 S. Portofino Dr., Sarasota, Fla. 33581

Filed May 14, 1979, Ser. No. 38,839
Int. Cl.[2] A47J *37/00*
U.S. Cl. 99—373 2 Claims

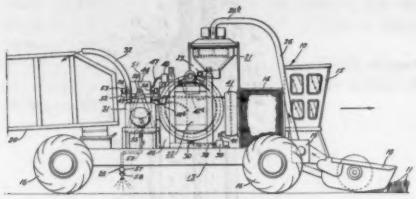


1. In a continuous griddle for grilling shaped muffins having a frame with upper and lower levels of burner ports below chain-conveyed cup and cover flights for transport of the muffins thereover, and sprockets adjacent to the end thereof for turnover of the same, the improvement in turnover sprockets of the cup and cover and muffin therein comprising first sprockets mounted in spaced relation on said axle in engagement with said cup flight, and second sprockets having the same pitch diameters and size and number of teeth as said first sprockets mounted astraddle said first sprockets in engagement with said cover flight.

4,207,811
DEWATERING PRESS

Donald C. Kline, Allentown, Pa., assignor to Lehampton Farms, Inc., Macungie, Pa.

Division of Ser. No. 713,349, Aug. 11, 1976, Pat. No. 4,109,448.
This application Aug. 15, 1978, Ser. No. 933,850
Int. Cl.[2] B30B *9/20*
U.S. Cl. 100—121 6 Claims



1. A dewatering press, comprising:

a pair of conical pressure members each having an outwardly extending annular flange adjacent its periphery,

frame means mounting said pressure members in juxtaposition with their conical surfaces confronting one another and their axes intersecting at an obtuse angle, said frame means including base means, a strut assembly projecting upwardly from said base means along the outside of each pressure member, hinge means mounting at least one strut assembly to pivot relative to said base means, and tie rod means extending across the pressure members to releasably connect said strut assemblies together,

an inwardly extending annular flange on each strut assembly telescoped relative to said conical member annular flange,

bearing means having inner and outer rings secured to said flanges for mounting said pressure members for rotation about their axes,

means carried by said frame means to rotate said pressure members, said rotating means including a driven member mounted to the outside of each pressure member adjacent its periphery, a rotor and means for rotating said rotor carried by said strut assembly, and means connecting said rotor and said driven member for rotating said pressure member in response to rotation of said rotor and moveable with said strut assembly about said hinge means,

deflector means interposed between said pressure members for engaging material pressed therebetween and expelling the material as the pressure members rotate, and

pan means extending along a peripheral portion of said pressure members to collect liquid expressed from said material during rotation of said pressure members.

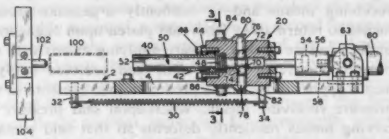
4,207,812
APPARATUS FOR DIE STAMPING BATTERY CONTAINER CAN ENDS

Jesse L. Morris, Archer, Fla., assignor to General Electric Company, Gainesville, Fla.

Filed Mar. 1, 1978, Ser. No. 882,317
Int. Cl.[2] B41F *17/16*
U.S. Cl. 101—4 6 Claims

1. An apparatus for stamping the end of a container, said apparatus comprising a die, means for guiding and aligning the end of a container with said die, impact means in axial alignment with said guiding and aligning means for delivering an impact to said container after said container is engaged with said die for causing said die to mark said container end and

means for moving said guiding and aligning means with said container against said die and for causing said impact means to



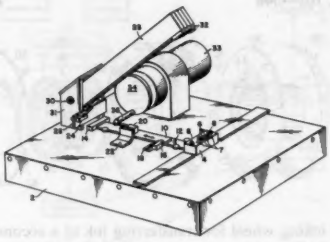
impact said container after said container is in engagement with said die.

4,207,813

MARKING APPARATUS AND METHOD THEREFOR

Oliver J. Schommer, Phoenix, Ariz., assignor to Tech-Aid Inc., Phoenix, Ariz.

Filed Dec. 18, 1978, Ser. No. 970,244
Int. Cl.[2] B41F *17/00*
U.S. Cl. 101—4 **21 Claims**



1. Marking apparatus comprising:
at least one punch;
first means for striking said at least one punch; and
second means coupled to said first means for returning said first means to a ready position for carrying out another striking operation, said first means comprises:
a striking hammer;
third means for supporting said striking hammer in its ready position; and
fourth means for tripping said third means allowing said striking hammer to impact said at least one punch, said third means comprises:
a pivotably mounted retaining lever;
a retaining pin mounted on said retaining lever for engaging said striking hammer to support it in its ready position; and
a slide member for engaging said retaining lever causing it to rotate, which rotation disengages said retaining pin from said striking hammer allowing said hammer to fall on said at least one punch.

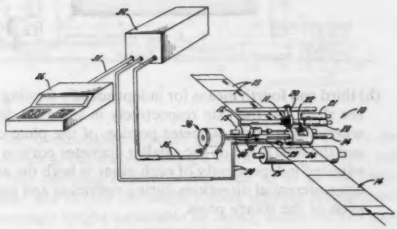
4,207,814

APPARATUS FOR PRINTING SERIAL NUMBERS WITH CHECK DIGITS

William D. Schenk, 270 Pryor Ave., Tonawanda, N.Y. 14150

Continuation of Ser. No. 755,940, Dec. 30, 1976, abandoned, which is a continuation-in-part of Ser. No. 623,431, Oct. 17, 1975, abandoned. This application Apr. 11, 1978, Ser. No. 895,513
Int. Cl.[2] B41L *49/02*; B41J *3/02*; B41F *3/86*
U.S. Cl. 101—76 **10 Claims**

1. An apparatus for numbering a series of successively fed documents with serial numbers and check digits having a predetermined relationship to said serial numbers, including weighted-type check digits derived from said serial numbers, said apparatus comprising:
a mechanically-advanced multiple wheel rotary sequential numbering head for applying said serial numbers to said documents, said numbering head being mounted on a first shaft for rotary press-type operation;
a wheel having check digit indicia engraved around substantially the entire periphery thereof;
a rotatable sleeve upon which said wheel is mounted for rotation relative thereto to permit the selective establishment of the printing orientation of said wheel, said wheel having an axis of rotation which lies in a plane perpendicular to the rotary axis of said sleeve, said sleeve being mounted for rotation on a second shaft parallel to said first shaft;
means for rotating said sleeve about its rotary axis for applying said check digit indicia to said documents in rotary-press type operation;



a stepping motor mounted for rotation with said sleeve to selectively drive said wheel in either direction about its axis for selectively establishing the printing orientation of said wheel while said sleeve is rotated about its axis by said means in rotating said sleeve; and
means for controlling the operation of said stepping motor including (a) means for successively deriving said check digits from said serial numbers, (b) means for determining the minimum rotation of said wheel required to change the position of said wheel from its previous printing orientation to the printing orientation required for printing of the next of said check digits and (c) means for generating signals to actuate said stepping motor to move said wheel through said minimum rotation.

4,207,815

ROTARY PRESS WITH MEANS FOR ADJUSTING THE POSITIONS OF PRINTING PLATES ON PLATE CYLINDERS

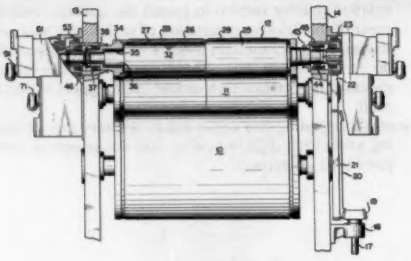
Seiichi Watanabe, Yokohama, Japan, assignor to Kabushiki Kaisha Tokyo Kikai Seisakusho, Tokyo, Japan

Filed Apr. 27, 1978, Ser. No. 900,416
Claims priority, application Japan, Apr. 27, 1977, 52-47812
Int. Cl.[2] B41F *13/16*
U.S. Cl. 101—248 **10 Claims**

1. In a rotary press of the type including a plate cylinder having a larger diameter portion and a smaller diameter portion, and a tube which is fitted over the smaller diameter portion of the plate cylinder for sliding motion in both circumferential and axial directions, the combination thereof with:
(a) a frame;
(b) a shaft secured to the tube and extending from one end of the plate cylinder coaxially therewith;
(c) an axle extending from the other end of the plate cylinder and secured thereto coaxially therewith;
(d) means mounting the shaft and the axle on the frame so as to permit independent rotary and axial motion thereof;
(e) a pair of driving helical gears supported for simultaneous rotation and restrained from axial motion with respect to the frame;
(f) a pair of driven helical gears mounted respectively on the shaft and the axle so as to be rotatable therewith and

movable axially relative thereto, the driven helical gears being in mesh with the respective driving helical gears;

(g) first and second means for independently moving each of the driven helical gears respectively in the axial direction; and



(h) third and fourth means for independently moving each of the shaft and the axle respectively in the axial direction; wherein the large diameter portion of the plate cylinder and the tube fitted on the smaller diameter portion may be adjusted independently of each other in both the axial and circumferential directions during operation and non-operation of the rotary press.

4,207,816

CONSTANT PRINTING PRESSURE MECHANISMS FOR LABEL PRINTING MACHINE

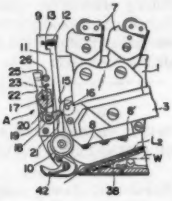
Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan

Continuation-in-part of Ser. No. 819,103, Jul. 26, 1977, abandoned. This application Jan. 5, 1978, Ser. No. 866,991

Claims priority, application Japan, Jul. 29, 1976, 51/089701; Jan. 8, 1977, 52/0505[U]

Int. Cl.[2] B41J *5/00*

U.S. Cl. 101—291 **24 Claims**



1. A label printing machine, comprising:

a machine frame; a printing lever supported to be movable with respect to said machine frame; a printing head connected to said printing lever to be movable thereby; an operating lever for operating said printing lever in a print direction and in a return direction; said operating lever being integrally connected with said printing lever and movable therewith;

a platen opposable to said printing head; said printing head being movable to said platen upon movement of said printing lever in said print direction;

a constant printing pressure mechanism, comprising:

pressure applying means attached to said printing lever for being moved thereby;

pressure receiving means comprised of elastic and resilient elastomeric material and supported on said frame to be stationary with respect to movement by said pressure applying means against said pressure receiving means; said pressure receiving means being provided for being resiliently engaged by and being positioned to be engaged by said pressure applying means upon movement of said pressure applying means in said print direction; said pressure receiving means being adapted to resiliently resist motion of said pressure applying means past said pressure receiving means and to resiliently urge said pressure means to return away from said platen upon engagement under pressure of said pressure applying means with said pressure receiving means until said pressure applying means applies more than a predetermined pressure to said pressure receiving means, whereupon said pressure receiving means resiliently deforms so that said pressure applying means with said printing head resiliently snap past said pressure receiving means; said printing head is thereafter freed by said pressure receiving means to move to said platen for printing a label.

4,207,817

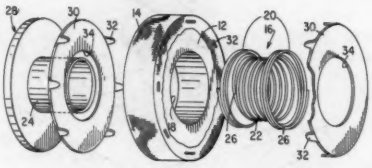
CONCENTRIC SPRING SUPPORTED RESILIENT INKING WHEEL

Burton L. Siegal, Skokie, Ill., assignor to Kiwi Coders Corporation, Wheeling, Ill.

Filed Sep. 5, 1978, Ser. No. 939,186

Int. Cl.[2] B41L *27/28*

U.S. Cl. 101—348 **13 Claims**



1. An inking wheel for transferring ink to a secondary surface in a rolling contact engagement therewith comprising, a hub, a ring of ink absorbent material, said ring having a central axial passage, a resiliently yieldable support for said ring engageable with said hub, said resilient support being seated within said axial passage and comprising; a concentrically disposed coil spring having a pair of outer coils, and inner coil and a pair of bridging coils at opposite ends of the inner coil linking said outer and inner coils, one of said outer coil pair and inner coil mounting said ring and the other of said outer coil pair and inner coil capable of being engaged on said hub.

4,207,818

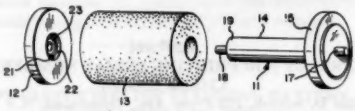
INK ROLLER AND METHOD OF MAKING SAME

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Sep. 22, 1978, Ser. No. 945,021

Int. Cl.[2] B41F *1/46*

U.S. Cl. 101—348 **12 Claims**



1. An ink roller, comprising: a one-piece hub composed of molded plastics material and having a roll-mounting section, a first annular flange section, a first stub shaft and a second stub shaft, the first flange section being disposed adjacent a first end portion of the roll-mounting section and adjacent the first stub shaft, the second stub shaft being joined to a second end portion of the roll-mounting section, the roll-mounting section, the first annular flange section, the first stub shaft and the second stub shaft being coaxial, a one-piece annular second flange section composed of molded plastics material, the second

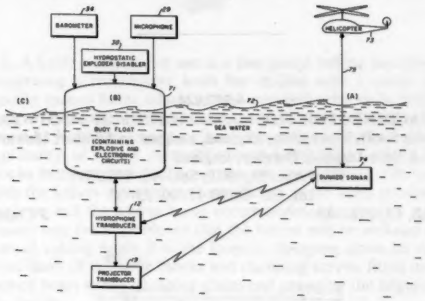
flange section having a hole through which the second stub shaft extends, the first stub shaft and the portion of the second stub shaft which extends outwardly beyond the second flange section having annular outer surfaces by which the roller can be rotatably mounted, a shoulder on the second flange section for receiving the second end portion of the roll-mounting section to locate the second flange section coaxially with respect to the axis of the hub, an ink-receptive tubular porous roll received by the roll-mounting section between the first and second flange sections, and means for permanently joining the second end portion of the roll-mounting section and the second flange section.

4,207,819

HELICOPTER DESTROYER

Keith E. Geren, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 12, 1963, Ser. No. 272,808
Int. Cl.[2] F42B *22/42*
U.S. Cl. 102—18 MS **12 Claims**



1. A helicopter destructor comprising in combination,
a hydrophone channel,
a microphone channel,
a barometer channel,
an AND gate connected to the outputs of said hydrophone, microphone, and barometer channels,
an explosive means, and
means connected to the outputs of said hydrophone channel and said AND gate for detonating said explosive means when a trio of signals are simultaneously applied to the respective inputs of said AND gate.

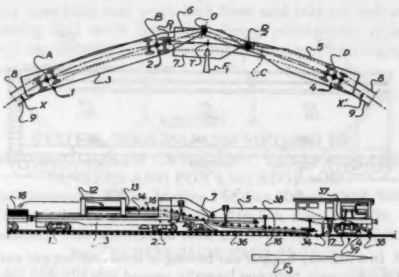
4,207,820

MOBILE APPARATUS FOR THE RENEWAL AND FOR THE CONSTRUCTION OF RAILWAY TRACKS

Ivo Cicin-Sain, Bussigny-pres-Lausanne, Switzerland, assignor to Matisa Materiel Industriel S.A., Lausanne, Switzerland

Filed Apr. 12, 1978, Ser. No. 896,016
Claims priority, application Switzerland, Apr. 22, 1977, 4998/77
Int. Cl.[2] E01B *29/05*
U.S. Cl. 104—2 **13 Claims**

1. A mobile apparatus for laying of railway tracks comprising a working tool carrying chassis adapted to effect at least the laying of new ties, a wagon for transporting and for the handling of material necessary for the said laying, and a carrying bridge structure having one end carried by a rolling support and the other end comprising a rolling support and at least one supplementary retractable rolling support adapted to bear on the track bed adapted to support a new track to be constructed, said carrying chassis being suspended above a working zone from the said carrying bridge structure, characterized in that the carrying bridge structure comprises a wagon having only a single rolling support disposed at its end and provided with said retractable supplementary rolling support and a longitudinally extending raised chassis which is pivoted at its other end to an overhanging bracket extending from the wagon adapted for transport, and the handling of material; and in that the carrying chassis is suspended and articulated at one



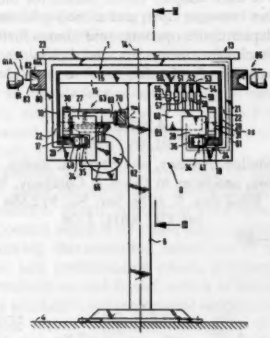
end to the overhanging bracket and at the other end to the raised chassis of the wagon having a single rolling support; and in that this carrying chassis is mounted so as to be height adjustable; and in that the single rolling support wagon has a supplementary height adjustable tie laying means on its raised chassis and disposed near its rolling support.

4,207,821

MONORAIL CONVEYOR

Reiner Beckert, Esslingen, Fed. Rep. of Germany, assignor to Bleitchert Förderanlagen GmbH, Osterburken, Fed. Rep. of Germany

Filed Sep. 19, 1978, Ser. No. 943,613
Claims priority, application Luxembourg, Sep. 29, 1977, 78204
Int. Cl.[2] B61B *13/06*
U.S. Cl. 104—119 **17 Claims**



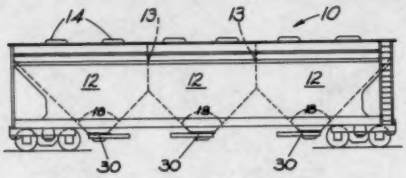
1. A monorail conveyor, comprising an inverted U-shaped rail including a web and two downwardly extending flanges having inwardly extending lower marginal portions; support means for maintaining said rail at a predetermined level above the ground, said support means having upper end portions extending from below into the interior of and being secured to said rail; a conveyance including an inverted U-shaped frame surrounding a portion of said rail and having bearing portions extending below said marginal portions and upwardly into the interior of said rail, and wheels rotatably mounted on said bearing portions in the interior of said rail and engaging said marginal portions; and means for driving said conveyance along said rail.

4,207,822

HOPPER CAR OUTLET GATE ASSEMBLY

James R. Zimmerle, O'Fallon, and Thomas B. Baker, St. Charles, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed May 4, 1978, Ser. No. 902,699
Int. Cl.[2] B61D 7/02, 7/20, 7/26
U.S. Cl. 105—253 6 Claims



1. In a railway hopper car having at least one hopper extending transversely between laterally spaced side sills and longitudinally of the car to define a hopper body; said hopper having hopper slope sheets extending downwardly and inwardly; said slope sheets having inner edges of rectangular configuration with the long rectangular dimensions extending transversely of the car; said inner ends having attached thereto an outlet frame of rectangular configuration generally conforming to said inner edges; said frame having a frame mounting flange; a single large outlet having a cross sectional area of substantially the entire area within said frame interchangeably attached to said frame, the improvement comprising:

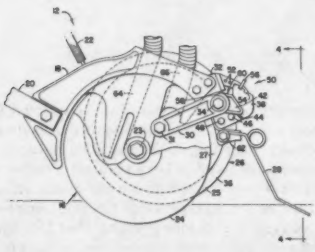
an interchangeable outlet adapter attachable to said outlet frame; said outlet adapter including a mounting flange conforming to said frame mounting flange and a divider extending longitudinally of the car which divides said adapter into a pair of transversely spaced adapter chutes; said adapter chutes including side walls and end walls, the lower ends of which define transversely spaced chute openings; a generally horizontally extending outlet gate located in each adapter chute; means for moving each of said gates between open and closed positions relative to each adapter chute opening; said chutes further including boot attachment means located below each chute for attachment of an unloading boot to each chute.

4,207,823

PLANTER

Ronald M. Steilen, Ankeny, and Steve A. Junge, Des Moines, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jun. 5, 1978, Ser. No. 912,554
Int. Cl.[2] A01C 5/06
U.S. Cl. 111—85 16 Claims



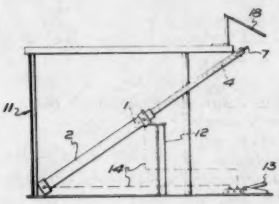
1. In an agricultural planter having a support frame, a pair of furrow-forming disks carried by the frame for rotation about respective axes and within upright planes so that the disks diverge upwardly and rearwardly from adjacent edges forward of their axes, a pair of depth gauge wheels carried by and supporting the frame, said wheels rotatable about axes spaced rearwardly of the disk axes, the peripheries of the wheels contacting the ground in the area where the disks leave the ground and cooperating with the disks to compact the furrow walls, a seed delivery means carried by the frame and adapted to discharge seed between the disks, the improvement comprising: a frame-carried support member disposed between the planes occupied by the disks and extending rearwardly of the wheel axes; pivot structure carried by the support member and spaced radially inwardly of the peripheries of the wheels; a pair of forwardly extending arms swingably mounted on the pivot structure, one arm projecting between each disk and its respective wheel for rotatably supporting said wheel; a bracket swingably carried by the support member in offset relation to the pivot structure, said bracket including an upwardly projecting portion; an abutment surface on the bracket offset from the pivot structure and engageable with each arm to limit swinging movement of the arm; and releasable locking means between the bracket and support member for securing the bracket against swinging movement.

4,207,824

MACHINES FOR THE MANUFACTURE OF FOOTWEAR

John Swift, Rossendale, England, assignor to Lambert Howarth & Sons Limited, Burnley, England

Filed Apr. 10, 1978, Ser. No. 895,059
Int. Cl.[2] D05B 15/00, 23/00
U.S. Cl. 112—49 3 Claims



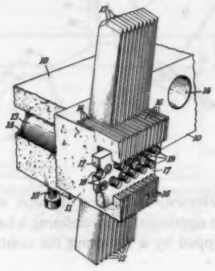
1. Apparatus for thong stitching in the manufacture of footwear comprising a support upon which are placed two of the footwear components each having a series of prepunched holes in superposition with a hole in one component aligned with a corresponding hole in the other component, said support being constructed and arranged to locate said components in a station in substantially horizontal relation, a power driven reciprocable barbed needle at said station disposed in alignment with said aligned holes, means for operating the power drive for said needle to pass the needle through said aligned holes, the free end of a thonging thread attached at the other end to one of the components being placed on the end of the needle that has passed through the components, and means for operating the power drive for the needle in reverse to draw the needle and the free end of the thread through said aligned holes, said needle being slidably mounted and guided in a hollow casing on said support and being mounted on a piston rod that projects through said casing from a pneumatic cylinder mounted on the support to extend at an angle to the vertical toward said station, and said piston having a stroke whereby when displaced in one direction it projects the needle through the end of the casing into the aligned component holes and when displaced in the other direction it may draw the needle entirely back into the casing carrying the thread under tension.

4,207,825

KNIFE ASSEMBLY FOR TUFTING MACHINES

Barrie Bleasdale, Oswaldtwistle, England, assignor to Edgar Pickering (Blackburn) Limited, Lancashire, England

Filed Nov. 24, 1978, Ser. No. 963,578
Claims priority, application United Kingdom, Jan. 9, 1978, 760/78
Int. Cl.[2] D05C *15/00*
U.S. Cl. 112—79 R 3 Claims



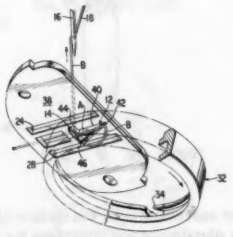
1. A knife assembly for use in a fine gauge tufting machine, comprising a rectangular knife bar drilled with a series of equaliy spaced holes which extend perpendicular to its front face, a series of knife blocks, each carrying a peg on its rear face which is fitted into and clamped in a hole in the knife bar, a plurality of knives carried by each knife block, the knife blocks being mounted adjacent one another on the knife bar with the knives oriented to the knife bar at the same pressing angle α, and the knives being accommodated in slots so machined into the knife blocks that the knives will be inclined at a small cutting angle β to the loopers, clamping plates on the front faces of the knife blocks and clamping screws fitted into tapped holes in the clamping plates and engaging the edges of the knives.

4,207,826

THROAT PLATE WITH THREAD SEPARATOR RIB

William J. Edwards, Cranbury, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Oct. 12, 1978, Ser. No. 950,655
Int. Cl.[2] D05B *57/14*
U.S. Cl. 112—184 4 Claims



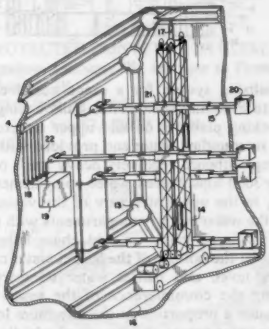
1. In a sewing machine having stitch forming instrumentalities including a reciprocating thread carrying needle and a loop-taker located in the bed of said sewing machine for grasping and expanding a loop of needle thread forming a work limb and a take-up limb as said needle penetrates the material being sewn, means associated with said looptaker for constraining said work limb and said take-up limb in different paths as said looptaker expands said loop of needle thread, an anti-haloing device comprising a throat plate having a bottom surface and a needle aperture formed therein through which said needle traverses, a fin-shaped member having smooth substantially unbroken surfaces depending from said throat plate in close proximity of said needle aperture and positioned in advance of said needle aperture in the direction of material feed, said fin-shaped member being arranged to occupy a position between said different paths in which said work limb and take-up limb of said loop of needle thread are constrained, said loop of needle thread being drawn across said fin member by the rotation of said looptaker during the stitch formation process thereby separating said work limb from said take-up limb and preventing said work limb from being prematurely drawn through the material being sewn due to frictional interengagement with said take-up limb.

4,207,827

SYSTEM, TOOLING AND METHOD OF CONSTRUCTION OF CRYOGENIC TANKS FOR LNG TANKERS AND FOR LNG STORAGE

Michel Gondouin, 32 San Marino Dr., San Rafael, Calif. 94901

Continuation-in-part of Ser. No. 716,176, Aug. 20, 1976, abandoned. This application Nov. 22, 1977, Ser. No. 853,866
Int. Cl.[2] B63B *25/08*; B65D *25/18*
U.S. Cl. 114—74 A 11 Claims



1. A system of membrane-type cryogenic tanks for bulk storage and for marine transportation of liquid cryogens, comprising rigid insulating walls, a bottom and a roof covered on an inner face and edges of said tank by a flexible membrane and supported on an outside face of said tank by an inner surface of a load-bearing tank structure, such as the hull of a tanker, presenting limited roof hatch openings when completed, and more specifically a system in which

(a) said insulating walls, bottom or roof of said cryogenic tank are made exclusively of prefabricated impervious rigid insulation panels bonded to each other in a rigid surface contact along their entire edge surfaces, by means of fast curing thermosetting adhesives to form a rigid structure; said prefabricated panels presenting a face in close proximity to said liquid, which is individually covered by a weldable cryogenic metal membrane fastened by deformable means to longtudinal edges of said panels during their prefabrication to provide a thermal-shock resistant barrier and said panels also presenting a back face which is partly covered by discontinuous fast curing thermosetting adhesive means of variable thickness to provide a surface to surface contact bond between said back face of said rigid panel and an irregular inner surface of said load-bearing tank structure over a fraction of said panel back face area, said fast curing thermosetting adhesive means being disposed in parallel bands so as to provide means for a gas circulation between said load-bearing tank inner surface and said panel back face,

(b) said composite panels, being structurally equivalent to slender beams of length nearly equal to the height of a tank and which, exhibit sufficient rigidity to permit their handling, positioning and assembling to the performed in

a single operation, by means of tooling designed so that the assembly line method of construction should be applicable to such a system.

4,207,828

STABILIZING SYSTEM FOR A CRANE VESSEL

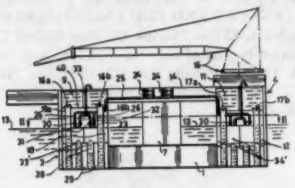
Alexandre Horowitz, Eindhoven, Netherlands; Pieter S. Heerema, Kapellen, Belgium, and Henricus P. Willemsen, Aarle-Rixtel, Netherlands, assignors to Varitrac AG, Zug, Switzerland

Filed Jan. 13, 1978, Ser. No. 869,233

Claims priority, application Netherlands, Jan. 20, 1977, 7700589

Int. Cl.[2] B63B *39/03, 43/06*

U.S. Cl. 114—125 **13 Claims**



1. A stabilizing system for a crane vessel comprising an upper structure having subaqueous hulls having hollow columns, a working platform on said upper structure above the level of the surrounding water and provided with crane means for displacing outboard relatively heavy loads over 250 tons, for instance 3000 tons, ballast water compartments above the water level, in the upper structure of the vessel, chute lines connecting the water ballast compartments with the surrounding water, discharge valves in said chute lines, said valves being located at the bottom of the ballast water compartments above water level, said ballast water compartments being divided along the circumference of the vessel for a water capacity in such a proportion to the maximum load to be displaced by the crane means, that by selectively discharging said ballast tanks, under the control of said discharge valves in said chute lines from the water compartments to the surrounding water a load compensation can be achieved, and means for selective control of said water discharge valves for the various water compartments in dependence on the moment of force applied to the vessel by the load being added to the crane means.

4,207,829

TOWABLE SWIMMER-CONTROLLED AQUATIC PLANE DEVICE

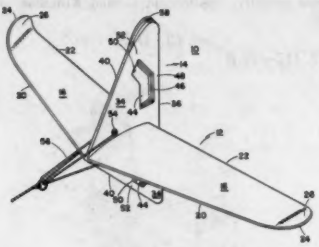
Robert L. Meister, 4404 Old Mill Rd., Ft. Wayne, Ind. 46807, and Monte A. Orr, Roswell, N. Mex., assignors to Robert L. Meister, Fort Wayne, Ind.

Filed Jul. 24, 1978, Ser. No. 927,545

Int. Cl.[2] B63G *8/00*

U.S. Cl. 114—245 **17 Claims**

1. A towable, swimmer-controlled, aquatic plane device comprising: an elongated wing element having substantially symmetrical sections on opposite sides of a transverse centerline; a fin element having sections on opposite sides of a transverse centerline; means for removably attaching said wing element at said centerline thereof to said fin element at said centerline thereof with said symmetrical sections thereof respectively extending substantially vertically above and below said wing element; said means comprises a slot in one of said wing and fin elements extending forwardly from said trailing edge thereof substantially along said centerline thereof, and a slot in the other of said wing and fin elements extending rearwardly from the leading edge thereof substantially along the centerline thereof, the slot in said one of said elements receiving the other element forwardly of the slot in the latter and the slot in the other element receiving said one element rearwardly of the slot in the latter to provide an interfitting connection; said other of said elements having means for attaching a tow rope thereto whereby a pulling force on said other element



retains said one element assembled thereto; said fin element sections having an opening therein defining a hand grip portion adapted to be gripped by a swimmer for controlling said device.

4,207,830

WATER FOIL

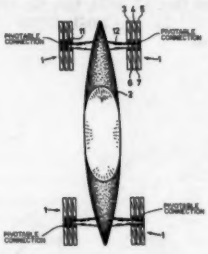
Felix Wankel, Fraunhoferstr. 10, 899 Lindau (B), Fed. Rep. of Germany

Continuation-in-part of Ser. No. 588,519, Jun. 19, 1975, abandoned. This application Sep. 21, 1977, Ser. No. 835,046

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1974, 2429669; Aug. 20, 1974, 2439822

Int. Cl.[2] B63B *1/24*

U.S. Cl. 114—274 **4 Claims**



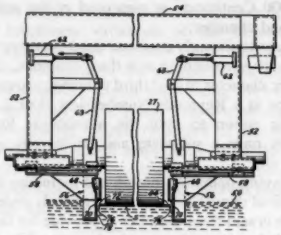
1. A body for movement over the surface of the water, said body having a plurality of foil structures for supporting said body on the surface of the water, which are formed of longitudinal foil strips, each strip not exceeding 100 mm. in width and having a length much greater than its width, and extending in the direction of movement, said foil structures including two structures on each side of said body and spaced longitudinally in the direction of movement with the structures on opposite sides transversely spaced, at least two of said structures opposite each other on the opposite sides being adjacent one end of the body, each of said two opposite, transversely spaced structures being formed by a plurality of said foil strips transversely spaced and parallel to each other.

4,207,831

APPARATUS FOR ONE SIDE COATING OF A CONTINUOUS STRIP

Herbert Wald, Baltimore; Harold K. Young, Dundalk, and Lacy C. Meadows, Baltimore, all of Md., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Feb. 16, 1979, Ser. No. 12,927
Int. Cl.[2] B05C 3/12, 11/00
U.S. Cl. 118—63 8 Claims



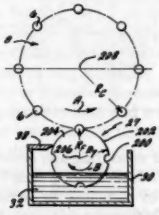
1. Apparatus for coating only one side of a metallic strip with molten coating metal, comprising a container of said molten coating metal, means for moving said strip in a path through said molten coating metal, guide means for advancing said metallic strip into and out of said molten coating metal, said guide means being partially immersed in said molten coating metal and having a width less than the width of said metallic strip, said guide means in contact with a second side of said metallic strip to be free of coating such that the edges of the metallic strip project beyond said guide means, a pair of gas nozzles adjacent said guide means for preventing coating by the molten coating metal of said second side, each nozzle having an opening therein directed toward one of said projecting edges of said second side, substantially perpendicular to the path of said metallic strip at the location where said guide means is partially immersed in said molten coating metal, and means for supplying gas under pressure to said nozzles.

4,207,832

NOTCHED APPLICATOR WHEEL

James L. Bowman, Cincinnati, and Terry J. Rowley, Fairfield, both of Ohio, assignors to Long-Lok Fasteners Corporation, Cincinnati, Ohio

Filed Dec. 18, 1978, Ser. No. 970,161
Int. Cl.[2] B05C 1/02
U.S. Cl. 118—212 5 Claims



1. In an apparatus for applying a patch of molten plastic to the threads of a fastener, said apparatus including a rotating transfer wheel, a portion of the edge of which is immersed in a reservoir of molten plastic, and including a moving carrier wheel rotating about an axis parallel to the axis of rotation of the transfer wheel and on which the fasteners are mounted substantially parallel to the axis of rotation of the transfer wheel, the carrier wheel moving the fasteners in a continuous motion tangentially contacting the circumferential edge of the rotating transfer wheel so that a patch of the molten plastic is transferred from the edge of the transfer wheel to the threads of the fastener, the improvement comprising:

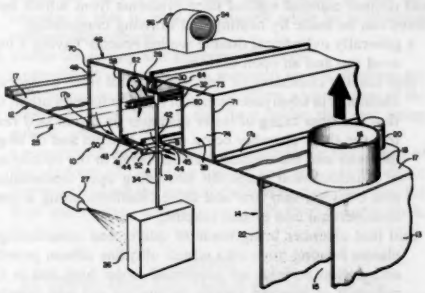
a region of the periphery of the transfer wheel defining a notch extending axially through the edge of the transfer wheel, the notch being large enough to permit the threaded portion of the fastener to seat into the notch as the fastener is moved past the edge of the transfer wheel and deep enough to extend around the threaded portion of the fastener to a chosen extent.

4,207,833

PROTECTED CONVEYOR SYSTEM

Stanley C. Napadow, Chicago, Ill., assignor to Protectaire Systems Co., Chicago, Ill.

Filed Dec. 28, 1978, Ser. No. 973,946
Int. Cl.[2] B05B 15/04
U.S. Cl. 118—324 17 Claims



1. For use with a conveyor having conveyor means for carrying articles through a path inside a booth where the articles are treated and in which are deleterious fluids or airborne particles, said booth having a wall with a longitudinally extending slot therein through which projects a portion of said conveyor means for transporting said articles,

a tunnel housing means substantially surrounding said conveyor means and said slot through which said portion of said conveyor means projects for travel longitudinally along said slot,

means for introducing non-deleterious fluid into tunnel housing means under a pressure greater than the pressure of the deleterious environmental fluids to discharge a portion of said non-deleterious fluid through said slot; so as to inhibit the flow of said deleterious fluids into said tunnel housing means and into contact with the remainder of said conveyor means,

and air curtain means for discharging a stream of non-deleterious fluid transversely across said slot and said projecting conveyor portion and longitudinally along said slot for redirecting said discharge of non-deleterious fluid from said articles and to provide a fluid curtain means across said slot against flow of said deleterious fluid and airborne particles into said conveyor means.

4,207,834

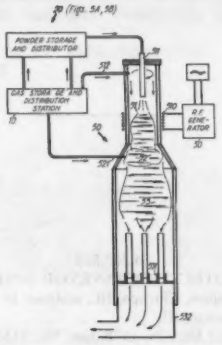
PROCESS AND DEVICES FOR THE ELABORATION OF PREFORMS FOR OPTICAL FIBERS

Jean Canteloup, Montlhery; Alain M. Mocellin, Evry; Michel A. Braguier, and Roger J. Tueta, both of Paris, all of France, assignors to A.R.M.I.N.E.S., Paris and Etat Francais, Issy-les-Moulineau, both of, France

Continuation-in-part of Ser. No. 794,991, May 9, 1977, abandoned. This application Oct. 13, 1978, Ser. No. 951,012

Int. Cl.[2] B05C *5/00*

U.S. Cl. 118—620 **3 Claims**



1. Plasma coating apparatus for uniformly coating with silica and dopant material optical fibre preforms from which optic fibres can be made by heating and drawing comprising:

a generally cylindrical double walled reactor having a covered top and an open bottom:

said reactor consisting of first, second and third cylindrical chambers in superposed vertical relation to each other, the first chamber being of lesser diameter on top of said reactor, the third chamber being on the bottom and of larger diameter and the second chamber being in the middle and of frustroconical shape for providing open communication between said first and third chambers along a common vertical axis of said reactor;

said first chamber being made of quartz and constituting a plasma heating zone into which ultrafine silicon powder and dopant powder are vaporized under heat and in the presence of injected plasma producing gas and injected silicon and dopant powders;

heating means comprising a radio frequency generator and an induction winding about said first chamber to vaporize injected silicon and dopant powders in a heating zone therein;

an ultrafine silicon powder storage means fitted with an outlet line to an injector from which said silicon powder is carried by argon fluidizing gas into a powder injector which projects downwardly through said top from said outlet line into said first chamber;

a dopant powder storage means fitted to said same outlet as said silicon powder storage means to mix with said silicon powder and be carried into the same powder injector as connected to said silicon powder means;

a powder injector axially projecting through the covered top of said reactor into position below the entry of a plasma producing gas at a location below the top but above the vaporization area of said plasma heating zone, said injector fed by argon fluidizing gas from said silicon powder means and said dopant powder means in the same line;

a plasma producing gas injector located near said top and above the outlet of said powder injector which injects fluidized argon transversely into said first chamber and tangentially to the mixed powder flow whereby heating and the velocity of said powder injector and said plasma producing gas injector creates turbulence in the mixture passing from the first chamber into said second chamber;

an oxygen injector for injecting at least one stream of oxygen into said second chamber transverse to the axis thereof whereby the vaporized mixture passing through said second chamber reacts with oxygen to convert the vaporized silicon metal into silica and the vaporized dopant into the oxide thereof which form microseeds of silica containing dopant in a size of about 1,000 Angstrom units under conditions of high turbulence and temperature of about 5000 Centigrade as measured at the outer side of said second chamber;

cooling means to strongly cool said third chamber within the double walls surrounding said third chamber, the cooling and larger diameter of said third chamber providing lesser turbulence at a Reynolds Number less than 3,500 and a quenching action to cool the microseeds for uniform deposition onto a substrate and to thereby produce a preform; and

a support having openings therein and including a substrate in the path of deposition of said microseeds under quenching action in said third chamber to provide for the build up of deposited microseeds on said substrate while permitting the carrier gas and plasma producing gas to pass out of the open bottom of said reactor.

4,207,835

ARRANGEMENT AND PHOTOMETER FOR MEASURING AND CONTROLLING THE THICKNESS OF OPTICALLY ACTIVE THIN LAYERS

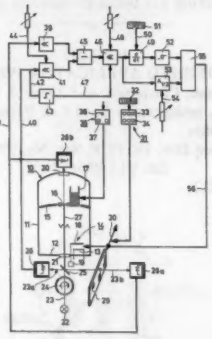
Horst Schwiecker, Kahl am Main; Gernot Thorn, Hanau am Main, and Hans-Peter Ehrl, Aufkirchen, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH & Co. KG, Fed. Rep. of Germany

Filed Jun. 16, 1977, Ser. No. 807,290

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1976, 2627753

Int. Cl.[2] C23C *13/00*

U.S. Cl. 118—664 **21 Claims**



1. Arrangement for measuring and controlling the thickness of optically active thin layers during their formation in vacuum coating installations, by detecting the relection or transmission behavior of layer thicknesses between fractions and some multiples of the wave-length of the essentially monochromatic measurement light used, and by interrupting the coating process when a predetermined layer thickness has been obtained, said arrangement comprising: a measurement light source for emitting a focused measurement light beam having the axis thereof directed towards the measurement object, a beam divider positioned at an angle of 45 degrees relative to the axis of the measurement light beam between the source and the measurement object for directly reflecting one portion 90° and transmitting another portion behind the beam divider and

directed on the measurement object, a chopper device disposed between the source and the divider, a measurement light receiver receptive of the light coming from the measurement object for producing a corresponding measurement signal and having a monochromator connected thereto, a reference light receiver receptive of the reflected portion of the beam and independent of the optical properties of the measurement object for producing a corresponding reference light signal, a phase sensitive photometerr amplifier having a trigger stage receptive of the reference light signal and parallel thereto a compensation circuit receptive of the reference light signal for equalizing brightness variations of the measurement light source, an input amplifier receptive of the measurement signal, a comparator receptive of the outputs of the input amplifier and the compensation circuit and having the output thereof applied to the input of the phase sensitive photometer amplifier, a differentiating circuit receptive of the output of the phase sensitive photometer amplifier, a null detector receptive of the output of the differentiating circuit and a circuit for effecting interruption of the coating process receptive of the output of the null detector.

4,207,836

VACUUM VAPOR-DEPOSITION APPARATUS

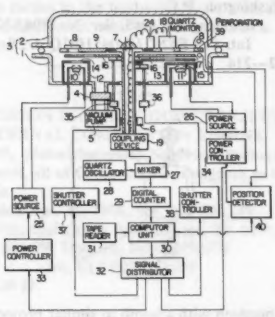
Yasuhiko Nonaka, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 22, 1978, Ser. No. 918,272

Claims priority, application Japan, Jul. 1, 1977, 52-77913; Jul. 8, 1977, 52-80968

Int. Cl.² B05C *11/00*

U.S. Cl. 118—664 **10 Claims**



1. In a vacuum vapor-deposition apparatus comprising

(a) a turntable for holding on its peripheral portions substrates on which vapor-deposited film is formed;

(b) a plurality of evaporating boats disposed opposite to said peripheral portions of said turntable;

(c) a plurality of power sources connected respectively with said evaporating boats to heat said boats separately;

(d) shutters located between said turntable and said evaporating boats and driven by external drive means;

(e) at least one quartz deposition monitor with a quartz oscillator disposed on said turntable; and

(f) a digital frequency counter, wherein materials evaporated from said boats are periodically vapor-deposited on said substrates to form multi-layer films thereon while said turntable is rotating, the improvement comprising:

(g) a coupling device having at least one coupling coil system consisting of a primary coil connected with said quartz deposition monitor and a secondary coil, said digital frequency counter being connected with said coupling device to measure the signal induced in said secondary coil with a signal having a resonance frequency of the quartz oscillator.

4,207,837

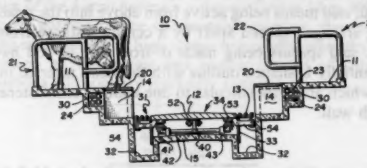
APPARATUS FOR A DAIRY BARN

Merle C. Schwartau; Daniel J. Schwartau, and David R. Schwartau, all of Rte. 4, Red Wing, Minn. 55066

Filed Aug. 21, 1978, Ser. No. 935,348

Int. Cl.² A01K *1/12*

U.S. Cl. 119—14.03 **9 Claims**



1. An apparatus used in a dairy barn that facilitates access to the dairy animals for milking, which comprises:

a. a fixed platform on which the animals stand during milking, the platform having a configuration that allows the operator to position himself to milk the animals;

b. a fixed support surface adjacent and lower than the platform;

c. a floor adjacent the platform and above the support surface that is selectively elevatable between a raised position in which the floor is substantially level with the platform so that the animals are able to approach or leave the platform by means of the floor, and a lowered position in which the floor is lower than the platform so that the operator is able to milk the animals while he is standing substantially upright;

d. means for raising and lowering the floor;

e. a plurality of adjacent stalls mounted on the platform for restraining the animals on the platform with the rear of the animal directed toward the floor while they are being milked; and

f. a plurality of milking nooks recessed along the length of the platform and opening toward and adjacent the floor, thereby allowing the operator access to the nook from the floor and milking access to two stalls from a single nook.

4,207,838

FEEDING TROUGH, FOR ANIMAL RAISING INSTALLATION, PARTICULARLY FOR FOWL FEEDING

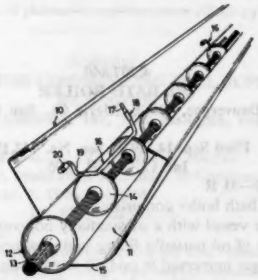
Camillo Pirovano, Via Spluga 52, Cernusco Lombarcone (Como), Italy

Filed Aug. 14, 1978, Ser. No. 933,600

Claims priority, application Italy, Aug. 31, 1977, 22089 B/77

Int. Cl.² A01K *5/00*

U.S. Cl. 119—51 CF **1 Claim**



1. A trough for feeding animals, especially in fowl-raising premises, having a substantially tubular form and a polygonal

cross-section open at the top comprising a seat for a fodder conveying and dispensing system as well as a space which is the feeding trough proper, characterized in that the seat of the fodder conveying and dispensing system and the trough space are in mutual free communication along the entire trough length, said trough space being laterally displaced from said seat and defining a horizontal bottom wall, means being further provided for holding said conveyance and dispensing device in its seat, said means being active from above into the system and being arranged spaced apart by a certain distance from each other, said spacers being made of iron wire or rod having a substantially U-shaped outline with the stems inserted in bushings which are perpendicular to one another and fastened to a trough wall.

4,207,839

BIRD FEEDER

Bernard R. Barry, Green Mansion Rd., Warrensberg, N.Y. 12885

Filed Nov. 9, 1978, Ser. No. 959,136
Int. Cl.[2] A01K *39/01*
U.S. Cl. 119—51 R **13 Claims**

11. A bird feeder comprising:
a bird feed container;
a circular cover having a depending periphery and disposed in overlapping manner above the container;
a container suspender pivotally mounted to said cover;
a support mounted on said cover for suspending said bird feeder from an overhanging object;
the container, cover, suspender and support all being symmetrically disposed about a common vertical axis, the distance between the pivot point of the suspender and the suspension point of the support being less than the radius of the cover.

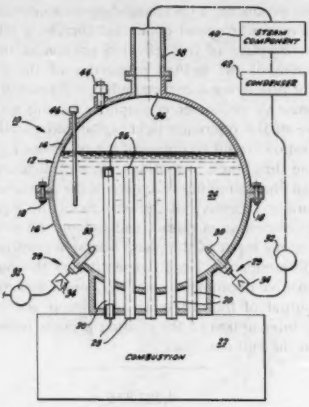
4,207,840

OIL BATH BOILER

Hector A. Dauvergne, 419 E. Merle Ct., San Leandro, Calif. 94577

Filed Sep. 14, 1978, Ser. No. 942,199
Int. Cl.[2] F22B *1/06*
U.S. Cl. 122—31 R **7 Claims**

1. An oil bath boiler comprising:
a pressure vessel with a substantially non-volatile and fixed volume of oil partially filling said pressure vessel, a heat exchanger immersed in said oil within said vessel, a combustion source communicating with said heat exchanger wherein heat from said combustion source is transmitted to said oil by said heat exchanger, a steam outlet communicating with said pressure vessel in a region not filled by said oil, and at least one water injection unit having a water outlet immersed in said oil wherein water is injected



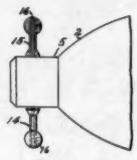
directly into said oil and is transformed to steam which exists said steam outlet.

4,207,841

DIPOLE ANTENNA FOR PROXIMITY FUZE

Thomas M. Bloomer, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 19, 1945, Ser. No. 594,632
Int. Cl.[2] F42C *13/04*; H01Q *1/28*
U.S. Cl. 102—214 **6 Claims**



1. In combination with a bomb or similar projectile intended to move rapidly through the air and having aerodynamic characteristics such that the longitudinal axis of said projectile will be substantially coincident with its trajectory, a dipole antenna mounted on a cylindrical projection which extends from the nose of said projectile, said antenna comprising a pair of extending arms normal to said longitudinal axis and on opposite sides thereof, a proximity fuse carried by said projectile, and means connecting said antenna to said fuse.

4,207,842

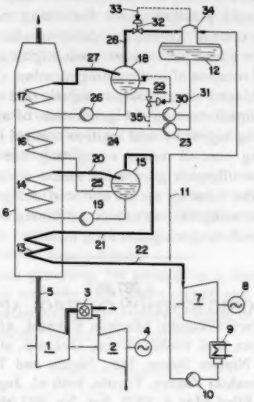
MIXED-FLOW FEEDWATER HEATER HAVING A REGULATING DEVICE

Rolf Kehlhofer, Dielstorf, Switzerland, assignor to BBC Brown, Boveri & Co., Baden, Switzerland

Filed May 17, 1978, Ser. No. 906,828
Claims priority, application Switzerland, Jun. 16, 1977, 7397/77
Int. Cl.[2] F22B *29/12*
U.S. Cl. 122—406 S **11 Claims**

1. A mixed-flow feedwater heater having a regulating device, espcially for a combined gas/steam turbine power plant utilizing exhaust gases of a gas turbine to generate steam for a steam turbine, comprising:

a feedwater tank;
first fluid drum means for containing a quantity of feedwater and steam;
means for supplying feedwater from the feedwater tank to the first fluid drum means;
means for supplying steam from the first fluid drum means to the feedwater tank;



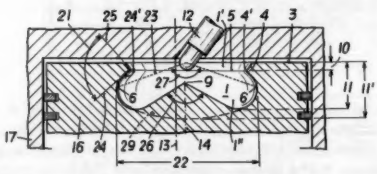
means for vaporizing the feedwater of the first fluid drum means; and,
valve means for regulating the supply of steam from the first fluid drum means to the feedwater tank; whereby a pressure in the feedwater tank is maintained at a predetermined rate.

4,207,843

COMPRESSION IGNITION DIRECT INJECTION INTERNAL COMBUSTION ENGINE

Hans List, 126, Heinrichstrasse; Siegfried Pachernegg, and Bruno Schukoff, all of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Apr. 21, 1978, Ser. No. 898,699
Claims priority, application Austria, Apr. 29, 1977, 3071/77; Jan. 13, 1978, 263/78; Mar. 13, 1978, 1792/78
Int. Cl.[2] F02B *19/08*
U.S. Cl. 123—30 D **18 Claims**



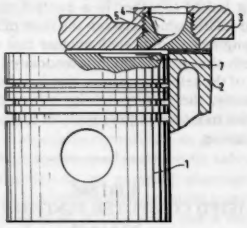
1. A compression ignition direct injection internal combustion engine comprising at least each one cylinder, a piston and an injection nozzle, the cylinder having an inlet port for inducing rotation of the incoming air about the axis of the cylinder and a combustion chamber or cavity in the form of a body of rotation disposed in the piston and receiving almost the entire quantity of combustion air at the end of the compression stroke, said chamber having, below the crown of the piston, a constriction which divides the chamber into an upper and a lower part, said injection nozzle being mounted with the nozzle tip substantially on the axis of the chamber and with its fuel jets being directed towards the wall of the chamber, the geometrical points of intersection of the axes of the injection nozzle holes lying below the narrowest cross-section of the constriction in the chamber throughout the entire injection period, the diameter of the narrowest cross-section of the chamber dividing the upper part from the lower part of the chamber measuring about 75 to 90% of the maximum diameter of the chamber, and the upper part of the chamber lying between the plane of the narrowest cross-section and the plane of the crown of the piston having a volume of about 10 to 30% of the overall volume of the combustion chamber, the engine operating at an unusually high compression ratio whereby fuel consumption by the engine and engine exhaust of unburnt hydrocarbons and soot are markedly reduced.

4,207,844

PISTON

Manfred Schlotterbeck, Stuttgart, Fed. Rep. of Germany, assignor to Mahle GmbH, Fed. Rep. of Germany

Filed Feb. 8, 1978, Ser. No. 875,955
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1977, 2708463
Int. Cl.[2] F02B *3/00*
U.S. Cl. 123—32 B **4 Claims**



1. Light metal piston for turbulence chamber diesel engines, in which the turbulence chamber arranged in the cylinder head comprises an uncooled annular insert at least partially adjoining the main combustion chamber between piston and cylinder cover, through which the fuel-air mixture from the turbulence chamber enters the main combustion chamber and in which combustion cavities are arranged in the crown of the piston, into which there opens a shallow injection passage oriented to the opening of the combustion chamber insert, the zones laterally of the injection passage being covered by a part of the annular insert of the turbulence chamber, characterised in that in these zones covered by the annular insert (5), laterally of the injection passage (8), outside the combustion cavities (6), the distance between the lower edge of the annular insert (5) and the crown surface of the piston (1) is increased by 0.15 to 0.7% of the piston diameter in comparison with the distance between the main surfaces of piston (1) and the cover of the cylinder (2).

4,207,845

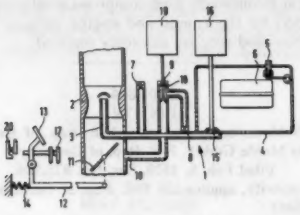
APPARATUS FOR CONTROLLING FUEL SUPPLY TO AN ENGINE

Franz Semmler, Albstrasse 167, 7332 Eislingen, Fed. Rep. of Germany

Filed Dec. 28, 1976, Ser. No. 754,941
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1976, 2605436; Apr. 9, 1976, 2615504
Int. Cl.[2] F02D *11/10*
U.S. Cl. 123—102 **25 Claims**

1. Apparatus for controlling fuel supply to a vehicle internal combustion engine, comprising: fuel supply means; selecting means for regulating supply of fuel from the fuel supply means, the selecting means being movable to select a supply regulating condition between and including maximum supply and idling supply; and means for interrupting the supply of fuel from the

fuel supply means, characterized in that the said interrupting means comprises two actuating devices operable independently of engine operating conditions, one said actuating device being activated when a speed value is exceeded with the said selecting means in the no supply state and the other said actuating device being activated when a predetermined vehicle speed is exceeded and wherein the said interrupting means comprises a control device and means for switching the said control device, and wherein the apparatus further comprises



means for monitoring engine speed and means for monitoring the state of the said selecting means, the two said monitoring means being linked together in a control circuit which provides a fixed relationship between the state of the said selecting means and engine speed, in such manner that whenever engine speed exceeds that speed which is associated with a predetermined state of the selecting means, that is, whenever the engine is over-running, the said switching means operates the said control device to interrupt the supply of fuel to effect a considerable fuel saving.

4,207,846

SIMPLIFIED COMPUTER IGNITION CONTROL SYSTEM

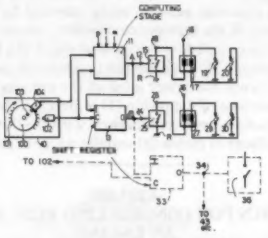
Wolfgang Borst, Schwieberdingen; Winfried Klotzner, Maulbronn; Ernst-Olav Pagel, Bohmfeld, and Hermann Vetter, Hessigheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 7, 1978, Ser. No. 894,335

Claims priority, application Fed. Rep. of Germany, May 26, 1977, 2723801

Int. Cl.² F02P 5/04

U.S. Cl. 123—117 D **11 Claims**



1. In an ignition system for an internal combustion engine having a rotating member; position signal furnishing means for furnishing a sequence of position signals each indicative of the angular position of said rotating member relative to a reference position, ignition control means for furnishing a spark generating signal in response to a change in current flowing therethrough, first spark generating means connected to said ignition control means for creating a spark in response to said spark generating signal, and timing control means interconnected between said position signal furnishing means and said ignition control means connected to and controlled by at least one operating parameter of the engine and by the reference signal for furnishing a timing output signal controlling the timing of current in flow in said ignionit control means at least in part in dependence on said at least on operating parameter and on said position signals relative to said reference position:

apparatus for furnishing sequential spark generating signals to said generating means (29,30) comprising, in accordance with the invention,

delay means interconnected between said timing control means, said position signal furnishing means, and said ignition control means, for delaying said timing output signal for a time period corresponding to a predetermined angle of rotation of said rotating member, thereby furnishing a delayed timing output signal, said delayed timing output signal causing the generation of a delayed spark generating signal by said ignition control means;

Said timing control means computing one timing output signal for all spark generating means during one revolution of the rotating means and said delay means temporally allocating said so computed timing output signal to the respective spark generating means.

4,207,847

ELECTRONIC IGNITION CONTROL APPARATUS

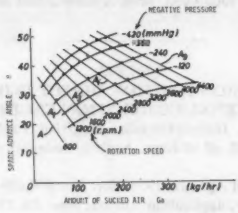
Tadashi Hattori, Okazaki; Mamoru Kobashi, Aichi; Tooro Kawase, Toyota, and Yoshiki Ueno, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

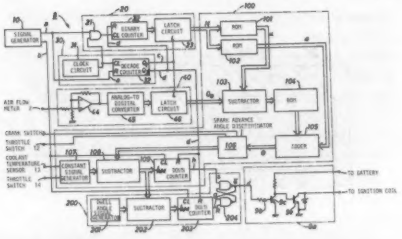
Filed May 4, 1978, Ser. No. 902,966

Claims priority, application Japan, May 11, 1977, 52-53913; May 31, 1977, 52-64069

Int. Cl.² F02P 5/04

U.S. Cl. 123—117 R **7 Claims**





1. An electronic ignition control apparatus for an internal combustion engine having an output shaft rotated by a piston, an ignition coil adapted to generate a spark voltage upon deenergization of the primary winding thereof, and a spark plug activated by the spark voltage to ignite the air-fuel mixture metered into a combustion chamber of said engine so as to operate said piston, the control apparatus comprising:

a first signal generator for producing a first binary signal indicative of rotation speed N of said output shaft;

a second signal generator for producing a second binary

signal indicative of an amount Ga of air intake of the combustion chamber of said engine;

first memory means for storing a parameter α for each incremental value of rotation speed N of said output shaft to produce a third binary signal indicative of a value of said parameter α corresponding to said first binary signal, said parameter α representing a difference between the amount Ga of air intake at the actual engine rotation speed required for any particular optimal spark advance angle, and an amount of air intake at a predetermined engine rotation speed required for the same optimal spark advance angle ($Ga \mp \alpha$);

a calculation circuit for calculating a value $Ga \mp \alpha$ from values respectively defined by the second and third binary signals and for producing a fourth binary signal indicative of the calculated value;

second memory means for storing the optimum spark advance angle θ satisfying α first linear equation $\theta = f(Ga \mp \alpha)$ and for producing a fifth binary signal indicative of the optimum spark advance angle θ in accordance with the fourth binary signal;

a timing signal generator for generating a timing signal in accordance with the fifth binary signal; and

means for deenergizing the primary winding of said ignition coil in response to the timing signal.

4,207,848

CHARGING AIR HEAT-EXCHANGER INSTALLATION

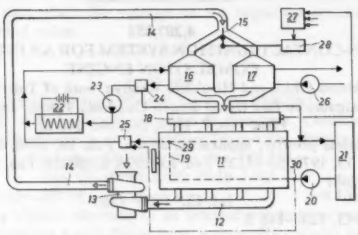
Hans Dinger, and Herbert Deutschmann, both of Friedrichshafen, Fed. Rep. of Germany, assignors to Motoren- und Turbinen-Union Friedrichshafen GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Aug. 16, 1977, Ser. No. 825,040

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1976, 2640732

Int. Cl.[2] F02M *31/00*

U.S. Cl. 123—122 D **23 Claims**



1. A heat-exchanger system for the charging-air of a low-compression cylinder piston internal combustion engine operating with exhaust gas turbo-supercharging, comprising a first charging-air-water heat-exchanger means which supplies to the charging air the heat energy of a heating means during start and partial load operation and which is operable to be connected with a cooling water circulation of the internal combustion engine, and a second charging-air-water heat-exchanger means which is operable to be connected with a cooling water circulation external of the engine, characterized in that the two charging-air-water heat-exchanger means are operable to be traversed in parallel by the charging air, and in that control means are provided which enable a control of the charging air throughflow through the individual heat-exchanger means in dependence on at least one of the temperature of the charging-air ahead of the cylinders and of the operating condition of the internal combustion engine.

4,207,849

AIR-FUEL RATIO CONTROL APPARATUS OF A FUEL SUPPLY SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

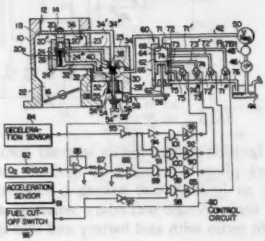
Masaharu Sumiyoshi; Setsuro Sekiya; Katsuhiko Motosugi, all of Toyota; Junzo Uozumi, Nagoya; Tsuneo Ando, Chiryu; Yuzo Takeuchi, and Mikio Minoura, both of Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Aisan Industry Co., Ltd., Ohbu, both of, Japan

Filed Aug. 11, 1978, Ser. No. 932,939

Claims priority, application Japan, Aug. 30, 1977, 52-104074

Int. Cl.[2] F02M *39/00*

U.S. Cl. 123—139 AW **5 Claims**



1. An air-fuel ratio control apparatus for an internal combustion engine having an intake passage and a throttle valve disposed therein, said apparatus comprising an air valve disposed in said intake passage upstream of said throttle valve to cooperate therewith to define an air pressure chamber and being operative to maintain a substantially constant pressure therein; a fuel circuit having at its downstream end a fuel discharge port open to said intake passage; and fuel metering means comprising means defining a variable fuel-metering orifice disposed in said fuel circuit and operatively associated with said air valve such that the fuel-flowing section of said fuel-metering orifice is varied substantially in proportion to the air-flowing section of said air valve; and a differential fuel pressure means operative to maintain a substantially constant fuel pressure difference across said fuel-metering orifice during normal engine operation, the fuel pressure in said fuel circuit upstream of said fuel-metering orifice being kept a substantially constant predetermined level higher than the atmospheric pressure, said differential fuel pressure means including a valve seat disposed in said fuel circuit between said fuel-metering orifice and said fuel discharge port, a diaphragm disposed in opposite relationship to said valve seat to cooperate therewith to define a fuel-flowing gap therebetween, spring means acting on said diaphragm, and spring pressure controlling means responsive to variation in the engine operating conditions to vary the force of said spring means thereby to control the force of said spring acting on said diaphragm whereby said fuel-flowing gap is varied to vary the fuel pressure in said fuel circuit downstream of said fuel-metering orifice for thereby varying the flow of the fuel through said fuel discharge port into said intake passage thereby to adjust the air-fuel ratio of an air-fuel mixture supplied into the engine, wherein said spring pressure controlling means comprises a cylinder communicated with said fuel circuit upstream of said fuel-metering orifice, a piston slidably mounted in said cylinder and having a surface exposed to the fuel pressure in said cylinder, means for varying the position of said piston relative to said cylinder in response to variation in the engine operating conditions, and mechanical means operatively connecting said piston to said spring means such that the movement of said piston in said cylinder varies the force of said spring means on said diaphragm.

4,207,850

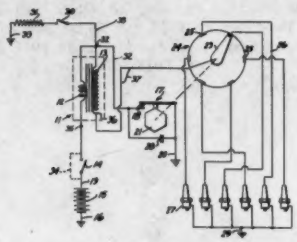
DEVICE FOR DETERRING UNAUTHORIZED OPERATION OF AN INTERNAL COMBUSTION ENGINE

Joseph E. Wharton, 32415 Yucaipa Blvd., Yucaipa, Calif. 92399

Filed May 30, 1978, Ser. No. 910,767

Int. Cl.[2] B60R *25/04*

U.S. Cl. 123—146.5 B **6 Claims**



1. In an ignition system for an internal combustion engine having spark plugs; a battery; an ignition switch; a circuit interrupter; an ignition coil having a low voltage primary winding, a high voltage secondary winding, a first terminal connected in series with said battery and said ignition switch, a second terminal connected in circuit with said interrupter, and a high tension terminal connected to said high voltage secondary winding; and a high voltage circuit for energizing said spark plugs in properly timed sequence from the high tension terminal of said ignition coil including a distributor rotor operable in time with said circuit interrupter:

means for preventing proper operation of said ignition system comprising the combination of:

resistance means for providing resistance to the flow of current in a circuit;

switch means alternately settable to open and closed positions; and

current conducting means for interconnecting said resistance means and said switch means in series between said second terminal of said ignition coil and a suitable ground connection;

said resistance means having a resistance rating and current carrying capacity adequate to drain off current from said ignition coil, when installed for use in said ignition system, to prevent proper energization of said spark plugs, while permitting a limited energization of the plugs to give the impression that said ignition system is operating properly, and to avoid intrinsic overheating risks, during normal functioning thereof when said switch means is set to a closed position; and

said switch means having sufficient current carrying capacity to insure proper functioning of said combination when it is set to a closed position in use;

whereby when said switch means in the installed combination is set to said closed position and said ignition switch is turned on, said ignition system appears to be functioning properly but said internal combustion engine will not start.

4,207,851

EMERGENCY IGNITION FOR INTERNAL COMBUSTION ENGINES

Charles J. Crisefi, 11502 59th Ter. North, Seminole, Fla. 33542

Filed Apr. 25, 1978, Ser. No. 899,739

Int. Cl.[2] F02P *1/00*

U.S. Cl. 123—148 DS **6 Claims**

1. An emergency ignition device for operating the ignition system of an internal combustion engine of a vehicle having a battery, an ignition coil, an ignition switch, a starter solenoid and a distributor, said device operating independently of said ignition switch and comprising:

(1) a housing means;

(2) a spark coil located within said housing having primary and secondary windings;

(3) an on-off emergency switch;

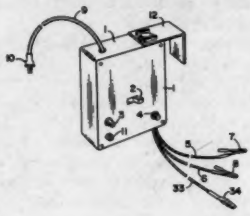
(4) a double-pole, two-position starter switch or button extending beyond said housing;

(5) at least four flexible leads extending from said housing comprising:

(a) a first lead for connection of starter switch or button to said starter solenoid,

(b) a second lead for connection of solid state integrated circuit and button switch to the positive terminal of said battery,

(c) a third lead for connection of the circuit to ground, and



(d) a fourth lead for connection of the spark coil to said distributor;

(6) a transistor;

(7) a solid-state integrated circuit capable of generating in combination with said transistor a voltage of at least 60,000 volts; and

(8) a resistor positioned so that when said starter button is in one position this resistor is shunted out of direct circuit with said solid-state integrated circuit thereby permitting generation of high voltage of at least 45,000–75,000 volts and when said starter button is released or put in the other position said resistor is connected in direct circuit with said solid-state integrated circuit so that the generated voltage is reduced to 20,000–35,000 volts.

4,207,852

NON-CONTACT IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

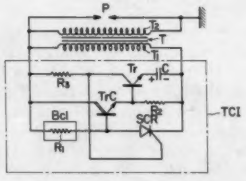
Yoshinori Ohki, and Hirokichi Komiya, both of Tokyo, Japan, assignors to Iida Denki Kogyo Co., Ltd., Tokyo, Japan

Filed Feb. 7, 1979, Ser. No. 10,321

Claims priority, application Japan, Feb. 10, 1978, 53-14755; Feb. 13, 1978, 53-15223; Feb. 23, 1978, 53-20232; Feb. 23, 1978, 53-22681

Int. Cl.[2] F02P *1/00*

U.S. Cl. 123—148 E **11 Claims**



1. A non-contact ignition system for an internal combustion engine comprising an ignition coil T with a plug P connected to a secondary winding T_2, said ignition coil T having a primary winding T_1 connected in parallel with a series circuit comprising a resistor R_3 of a specified resistance value, a transistor Tr and a capacitor C and a series circuit comprising a transistor circuit TrC and a resistor R_2 of a lower than said

specified valve resistance value, said transistor circuit TrC having a base connected to a base trigering circuit Bc1 for controlling the triggering of said transistor circuit TrC, said base circuit Bc1 having a thyristor SCR connected thereto to control the turn-off of said transistor circuit TrC, said transistor Tr having its base connected to the emitter of said transistor circuit TrC and its collector connected to the gate of said thyristor SCR.

4,207,853

STARTING SYSTEMS FOR INTERNAL COMBUSTION ENGINE

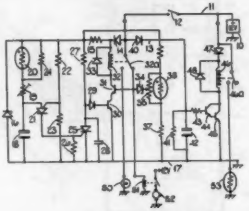
Edward G. Phillips, Colne, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jul. 20, 1978, Ser. No. 926,243

Claims priority, application United Kingdom, Oct. 19, 1977, 43468/77

Int. Cl.[2] F02N *17/00*

U.S. Cl. 123—179 B **6 Claims**



1. An internal combustion engine starter motor control system including an automatic temperature dependent delay timer including an output transistor which is biased to conduct, a thyristor connected so as when conductive to turn the output transistor off, a timing capacitor, a charging circuit for the timing capacitor including a temperature sensing element such that the charging time constant of the capacitor decreases as the temperature sensed by said element increases and a unijunction transistor arranged to discharge the capacitor into the thyristor gate when the voltage on the capacitor exceeds a predetermind value.

4,207,854

INLET AIR PASSAGE FOR AN ENGINE

Richard R. Alford, Peoria, and Alan R. Stockner, Chillicothe, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 13, 1978, Ser. No. 869,195

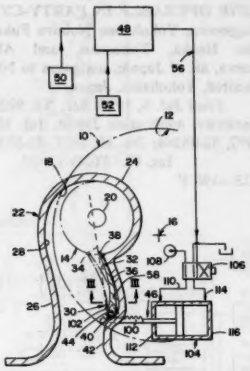
Int. Cl.[2] F01L *3/00*; F02B *3/00*

U.S. Cl. 123—188 M **4 Claims**

1. In a cylinder assembly of an internal combustion engine which comprises a cylindrical bore, a generally circular valve communicating with an end of said cylindrical bore intermediate an axis and an outer bore wall thereof, said valve being adjacent and substantially tangent to said outer bore wall, said valve having a valve stem extending away from said end of said cylindrical bore and an inlet passage having a first portion extending away from said valve generally parallel to said valve stem and a second portion generally perpendicular to said first portion and extending away from said cylindrical bore, said inlet passage having an outer generally linearly extending wall generally tangent to said outer bore wall adjacent said valve and an inner wall opposite said outer wall, an improvement comprising:

a concave surface forming a section of said inner wall adjacent said valve and facing towards said outer wall, said concave surface falling substantially on a surface of a cylinder which has an axis parallel to that of the cylindrical bore, a radius of curvature of said concave surface falling within a range from about 65% to about 35% of a diameter of said cylindrical bore, said section comprising a vane extending from a first end thereof adjacent said valve to a second end thereof spaced from said valve and adjacent a continuation of said inner wall;

means for pivotally attaching said second end of said vane to said inner wall; and



means for rotating said vane about said pivotal attaching means responsive to engine speed, said vane being rotated towards said outer wall at lower engine speeds and away from said outer wall at higher engine speeds.

4,207,855

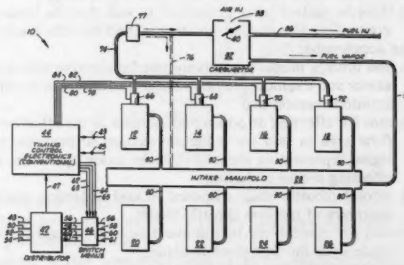
FUEL CONSERVATION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Wayne A. Phillips, 10010 Memorial Rd., #1005, Houston, Tex. 77024

Filed Feb. 6, 1978, Ser. No. 875,165

Int. Cl.[2] F02D *9/00, 17/02*

U.S. Cl. 123—198 F **17 Claims**



1. A fuel conservation system for an internal combustion engine, comprising:

means for bypassing fuel through the engine to a fuel return system;

means for interrupting operation of a fuel ignition means of said engine; and

control means for automatically and concurrently activating said fuel bypass means and said ignition interruption means in response to an engine parameter.

15. A method for conserving fluid in a multi-cylinder internal combustion engine having electrical ignition means, comprising:

sensing an engine parameter;

interrupting said electrical ignition means of certain preselected cylinders of said engine in response to a predetermined change in said sensed engine parameter;

bypassing, through said preselected cylinders, fuel vapor from said cylinders, concurrently with the interruption of said ignition means; and

returning said fuel vapor to a fuel system.

4,207,856

I.C. ENGINE OPERABLE IN PARTY-CYLINDER MODE

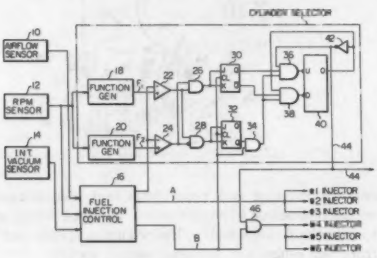
Fukashi Sugasawa, Yokohama; Noburu Fukasawa, Kamakura; Haruhiko Iizuka, Yokosuka, and Akitoshi Mumura, Tokorozawa, all of Japan;, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 6, 1978, Ser. No. 922,348

Claims priority, application Japan, Jul. 15, 1977, 52-85263; Jul. 15, 1977, 52-85264; Jul. 15, 1977, 52-85265

Int. Cl.[2] F02D *17/02*

U.S. Cl. 123—198 F **4 Claims**



1. An intake air control system of an internal combustion engine having a plurality of cylinders supplied by separate fuel injectors for supplying fuel to selected ones of the plurality of cylinders in a part-cylinder mode operation, said system comprising:

an air induction system leading to the plurality of cylinders, said induction system including an induction passage having one end communicable with said plurality of cylinders;

a throttle blade disposed in said induction passage;

a throttle control lever connected to said throttle blade for controlling the angular position of said throttle blade;

an accelerator;

a first linkage means operatively interconnecting said accelerator and a remote portion of said throttle from an axis of rotation thereof; and

means for effecting an additional increase in the effective air flow area in said air induction system in response to a signal representing the part-cylinder mode operation, said effecting means including

a second throttle blade disposed in said induction passage upstream of the first throttle blade;

means for operatively interconnecting said second throttle blade with the first throttle blade;

said second throttle blade being smaller in dimension than the first throttle blade and movable within a chamber in said induction passage which is spaced from wall means for defining said induction passage to form an annular space therebetween;

valve means for closing said annular space; and

actuator means for selectively opening said valve means.

4,207,857

AUTOMATIC BALL SERVER

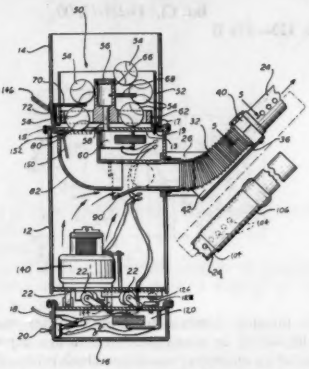
William J. Balka, Jr., 1120 Prospect St., Westfield, N.J. 07090

Filed May 18, 1978, Ser. No. 906,925

Int. Cl.[2] F41F *1/04*

U.S. Cl. 124—56 **2 Claims**

1. In a ball serving machine, a generally cylindrical compressed air chamber adapted to be placed on the ground or other supporting surface so that its longitudinal axis extends vertically when the machine is placed in operating position, an air compressor in said chamber for pressurizing said chamber, a ball discharge conduit in said chamber, said conduit having a vertical section secured to the top wall of said chamber, a horizontal section secured to and extending through the side wall of said chamber, and an elbow section forming a smoothly curved junction between said vertical and horizontal conduit sections for facilitating the passage of balls therebetween, said conduit providing a continuous ball rolling surface through said chamber except for an air injector port in the horizontal section of said conduit directly connecting said conduit with said chamber so that compressed air from said chamber is discharged through said port and into said conduit in the direction of ball passage therethrough, an opening in the top wall of said chamber within the confines of the vertical section of said conduit for enabling balls to be dropped from a ball compartment secured to the top of said chamber through said opening and into said conduit, said ball compartment having its upper end open to the atmosphere and being sealed off from said chamber except through said opening, a flap valve in said conduit for sealing said opening adapted automatically to open for the passage of balls from said ball compartment into said conduit and to close in response to an increase of air pressure in the vertical section of said conduit above the air pressure in said ball compartment, a ball firing barrel connected to said conduit outside said chamber containing a detent against which a ball passing into said firing barrel becomes lodged in fluid tight relationship until the air pressure behind said ball increases to a level wherein the ball is forced past said detent and fired through said firing barrel, and means in said ball compartment for successively feeding balls therein through said opening and into said conduit.



4,207,858

COMPOUND BOW

Robert L. Blackstone, 1912 Country Club Rd., Hendersonville, N.C. 28739

Filed Apr. 4, 1978, Ser. No. 893,457

Int. Cl.[2] F41B *5/00*

U.S. Cl. 124—23 R **4 Claims**

1. In a compound bow having a handle portion and flexing limbs extending outwardly from the handle portion, the improvement comprising:

a pair of bow limbs;

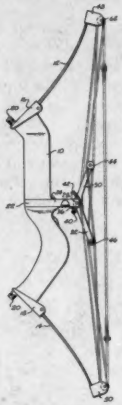
a bracket carried by a medial portion of handle portion and extending rearwardly therefrom;

a pair of arms being pivotally attached adjacent inner ends thereof to a said rearwardly extending bracket;

said pair of arms diverging rearwardly from said bracket, a string engaging member carried adjacent an outer end of

each of said arms, a pair of pulleys carried adjacent each remote end of said limbs;

a bow string having one end attached to said inner end of one of said arms and being trained around one of said pulleys on a remote end of one of said limbs back around a forward side of a string engaging member carried on one of said arms, around a rear side of said string engaging member carried by said other arm, around one of said pulleys on a remote end of the other said limb, back across



said limbs, around the other pulley carried on a remote end of said one of said limbs, around a rear side of said string engaging member carried on said one of said arms, around the forward side of said string engaging member carried by said other arm, around the other pulley carried by a remote end of said other limb, and having the other end attached to said inner end of said other of said arm;

the portion of said string extending between said one of said pulleys of said other limb and said other pulley of said one of said limbs containing a notching zone for an arrow.

4,207,859

ARCHERY BOW

Gerard J. Scholten, Heemskerklaan 4, Son & Breugel, Netherlands

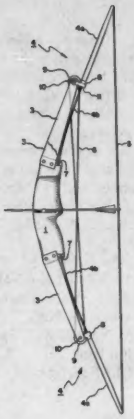
Filed Jun. 19, 1978, Ser. No. 916,484

Claims priority, application Netherlands, Jul. 1, 1977, 7707312

Int. Cl.[2] F41B *5/00*

U.S. Cl. 124—24 R **7 Claims**

1. An archery bow which comprises: an elongated handle section, first and second bow limbs, each of which includes a first axial portion which is flexible and a second end abutting axial portion which is more rigid than said first axial portion, said first and second bow limbs being connected respectively at each end of said elongated handles section, a bow string tensioned between the free ends of said first and second bow limbs, rigid extensions extending from each end of said handle section, a first end of each of said first axial portions being hingedly connected to one end of said handle section and a section end of each bow limb being respectively hingedly connected to the free end of said extensions, said second axial portions extending respectively from said second ends of said first axial portions and each said second axial portion having a free end which constitutes the free end of said bow limb, said



first axial portions being subjected substantially to bending by buckling only.

4,207,860

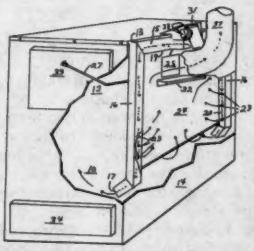
WOOD-COAL HEATING UNIT

Andrew J. Schrock, Rt. #1, Box 68A, Shiloh, Ohio 44878

Filed Jan. 25, 1978, Ser. No. 872,232

Int. Cl.[2] F24C *1/14*

U.S. Cl. 126—77 **5 Claims**



1. A stove comprising

a body having a front wall, rear wall, top wall, base wall and parallel side walls;

a grate within said body spaced above said base wall to define an ash compartment below said grate and an upper secondary and lower primary combustion zones above said grate;

fuel inlet means and ash removal means;

an air inlet port located at the top edge of said rear wall and located between said side walls;

an air supply manifold in said body including a horizontal duct located along the intersection of said top and rear walls and communicating with said air inlet port and having two vertical ducts located along the intersection of said rear and side walls, the top ends of said vertical ducts in fluid communication with the ends of said horizontal duct, and the lower ends of said vertical ducts terminating above said grate and having outlet port means to direct air toward the grate and away from the rear wall;

a partition spaced from and parallel to said rear wall and attached at its side and top edges to the front of the verti-

cal and horizontal ducts respectively and having a lower edge above said outlet port means, the distance between said rear wall and said partition being much less than the distance between said front wall and said partition, the space bounded by said partition, rear wall, vertical ducts and horizontal ducts forming a secondary combustion chamber having an entrance at its lower end in communication with said lower primary combustion zone;

an outlet means located below said air inlet means and in communication with said secondary combustion chamber and an exhaust flue conduit;

apertures in said manifold in fluid communication with said secondary combustion zone, the lower end of said secondary combustion chamber and the upper end of said secondary chamber near said outlet means.

4,207,861

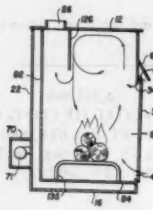
FIRE BOX GAS BAFFLE AND HOOD

Carrol E. Buckner, Weaverville, N.C., assignor to Smoky Mountain Enterprises, Inc., Asheville, N.C.

Continuation-in-part of Ser. No. 693,805, Jun. 7, 1976, Pat. No. 4,092,976. This application Aug. 26, 1977, Ser. No. 828,208

Int. Cl.[2] F24B *11/00*

U.S. Cl. 126—83 **3 Claims**



1. A heating unit comprising:

a firebox;

a flue port;

a draft port adjacent the bottom of said firebox to provide air to a fire for primary combustion;

an access opening in the front of said firebox;

a substantial planar baffle means extending substantial normally down from and attached to the top of said firebox and adjacent said flue port for retaining some of the rising gases adjacent said top and for directing some of said gases into a fire portion in said fire box;

door means for covering and uncovering said access opening in a closed and open position, said door means being mounted to said heating unit spaced along the top edge from the top of said access opening when said door means covers said access opening in a closed position to always allow air to circulate into said firebox adjacent said top for aiding ignition of said gases adjacent said top and said baffle means.

4,207,862

FIREPLACE COOKING RANGE AND ROOM AIR HEATER

Walter W. Meyer, 14151 75th Ave. N.E., Bothell, Wash. 98011

Filed Nov. 4, 1977, Ser. No. 848,401

Int. Cl.[2] F24B *1/26*

U.S. Cl. 126—137 **1 Claim**

1. A fireplace cooking range and room air heater, comprising the assembly of:

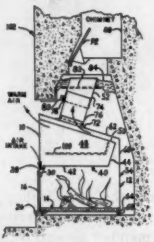
(a) a fire chamber having front entry doors, left, right, and back side walls, a stainless steel bottom, and an open top;

(b) a cooking range-air heater located above the fire chamber having front entry doors, left, right, and back side walls, a bottom, and a closed top sloping downwardly to the rear, and being narrower in width than the fire chamber; and being shorter in length in extending to the rear, than the length of the fire chamber;

(c) surrounding walls extending directly up from the left, right, and rear side walls of the fire chamber to a height above the cooking range-air heater, forming passageways along the left, right, and rear sides of the narrower and shorter cooking range-air heater;

(d) a top enclosure secured to the surrounding walls and slopingly spaced above the closed top of the cooking range-air heater, and having a top opening for receiving a flue;

(e) a flue for directing the gaseous combustion products coming from the fire chamber up a chimney comprising, in turn; telescoping and clampable flue portions to adjust the overall flue length from the top of the top enclosure into the chimney of a dwelling fireplace to a height below the regular draft mechanism of the dwelling, which is thereafter left in the open position; a flange support selectively placed about the telescoping and clampable portions; and a non combustible mat of material supported on the flange support and extending in all horizontal direc-



tions to fully contact the interior walls of the chimney of a dwelling fireplace to seal any possible exit of room air which would otherwise flow upwardly in the chimney after passing by the exterior of this flue;

(f) a room air intake located below the entry doors of the cooking range-air heater and just above the top of front entry doors of the fire chamber;

(g) draft control located just inside the room air intake to guide room air down inside and alongside the closed entry doors of the fire chamber, thereby keeping soot and other particles from collecting on the inside surfaces of these closed entry doors, and keeping these closed entry doors cooler, and directing the room air down into the lower regions of the fire burning in the fire chamber to improve the combustion; and

(h) spaced supports below the fire chamber raising the fire chamber above the hearth of a dwelling fireplace allowing room air to pass under the fire chamber, alongside the fire chamber, up the backside of the fire chamber, alongside the surrounding walls, across the top enclosure, and back into the room as heated air at a higher temperature.

4,207,863

DOOR FOR PYROLYTIC RANGE

Claude Drouin, Montmagny, Canada, assignor to Les Industries BFG Limitee, Montmagny, Canada

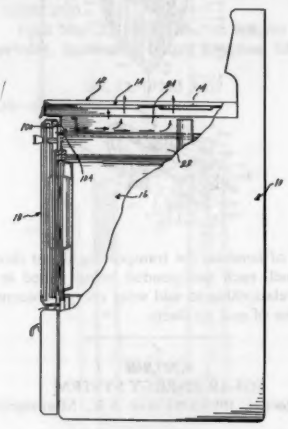
Division of Ser. No. 757,434, Jan. 6, 1977, Pat. No. 4,163,444. This application Mar. 3, 1978, Ser. No. 883,197

Int. Cl.[2] F23M *7/00*

U.S. Cl. 126—198 **4 Claims**

1. A range comprising: a top cooking surface including air evacuation means therethrough; an oven located beneath said cooking surface consisting of a forwardly opening cavity and adjacent front wall means including top, bottom and sidewalls; a door closing said walls and said cavity; said door comprising a series of spaced parallel panels defining therebetween a series

of air passageways; each said panel including a window section; said door further comprising inlet and outlet openings located at the top and bottom edges thereof for allowing cooling air to flow in said passageways to reduce the temperature of said window sections; air outlet means in said top wall in air flowing connection with said air evacuation means of said top cooking surface; and a continuous gasket extending between



said door and said top and side walls; said gasket being received on said top wall above said air outlet means, whereby air circulating in one of said passageways is trapped by said gasket as it exits said outlet openings along said side walls between said door and said wall means, and is directed upwards and evacuated through said air evacuation means of said top cooking surface.

4,207,864

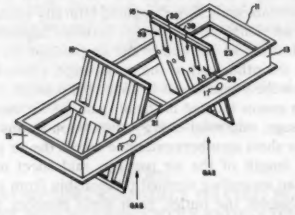
DAMPER

George A. Fischer, Boxford; Robert A. Walter, Concord, and Albert S. Melilli, Winchester, all of Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 8, 1978, Ser. No. 913,605

Int. Cl.[2] F23L *11/00*

U.S. Cl. 126—285 R **8 Claims**



1. A damper device for alternatively blocking the flow of a gas through a duct comprising:

a damper blade rotatably positioned across the duct, said damper blade including a central support member having attached thereto a pair of oppositely extending blade halves; each blade half being a continuous metal sheet having geometrically shaped corrugations formed therein;

a plurality of gas ports formed in the gas exposed side of said central support member; and,

an angle member attached at the free end of each blade half whereby a continuous flat sealing surface is formed at the end of each blade.

4,207,865

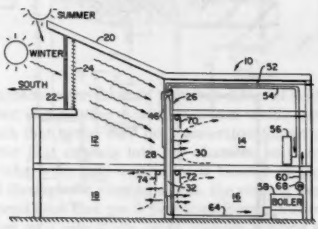
PASSIVE SOLAR HEATING DEVICE

Reed R. Allen, 825 S. Wolfe Rd., Sunnyvale, Calif. 94086

Filed Jul. 31, 1978, Ser. No. 929,509

Int. Cl.[2] F29J *3/02*

U.S. Cl. 126—431 **14 Claims**



1. An enclosable structure having an interior passive solar space heating system comprising:

a partition wall comprising a device separating at least two rooms on each of a first story and a second story, said device comprising

(a) means for absorbing direct solar radiation as thermal energy;

(b) means for dissipating thermal energy to said at least two rooms;

(c) a fluid circuit line having a vertical path differential, said circuit line being adapted to be filled with a fluid, said circuit line comprising a first segment abutting to said radiation absorbing means for absorbing thermal energy from said radiation absorbing means into fluid contained within said first segment, and a second segment abuting to said thermal energy dissipating means and adapted to dissipate thermal energy from fluid contained within said segment to said thermal energy dissipating means, said fluid circuit line being operative as path for flow of fluid by thermal convection between said first segment and said second segment upon the establishment of a thermal differential between fluid-containing segments; and

(d) means for thermally insulating said radiation absorbing means and said first segment from said thermal energy dissipating means and said second segment, wherein said insulating means comprises a planar partition abutted between said first segment and at least a portion of said second segment and wherein said absorbing means further comprises a sheet of substantially rigid thermally conductive material having a radiation absorptive surface adapted to be oriented to receive impinging solar radiation for promoting the establishment of said thermal differential;

a fluid adapted for convection in said circuit line of said device;

a thermally insulated fluid resevoir sealably coupled in said circuit path of said device for storing a portion of said fluid; and

a clerestory disposed above said second story, said clerestory having a window, said window being disposed at such a location to permit impingement of solar radiation upon said radiation absorption means such that thermal energy may be dissipated from said device after absorption of radiant energy through said clerestory.

4,207,866

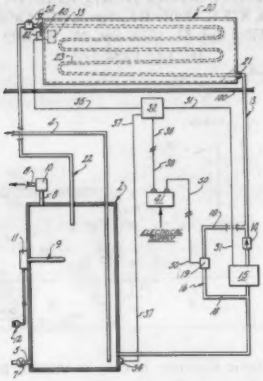
SOLAR HEATING SYSTEM INCLUDING FREEZE PROTECTION

Rodney E. Boyd, 2132 Ardley Rd., Juno, Fla. 33408

Continuation of Ser. No. 833,543, Sep. 15, 1977, abandoned. This application Dec. 21, 1978, Ser. No. 972,094

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—420 **10 Claims**



1. In a pressurized solar water heating system; a water storage tank; first conduit means for connecting a water supply to said tank; a solar collector having a flow passageway therethrough with an inlet and an outlet; second conduit means connecting the lower part of said water storage tank to the inlet of said solar collector for delivering water to said solar collector; third conduit means connecting the outlet of said solar collector to said water storage tank; said second conduit means, solar collector flow passageway, and third conduit means forming a continuous water conduit; fourth conduit means for directing water from said tank to a desired location; pump means operatively connected with said continuous water conduit for circulating water from said water storage tank through said second conduit means, solar collector flow passageway, and third conduit means back into said water storage tank; freeze control means including a bypass means operatively connected in said system to bypass said pump means for permitting flow from said water storage tank through said solar collector back into the water storage tank by natural convection.

4,207,867

SOLAR ENERGY COLLECTOR AND METHOD

Lincoln Hanks, 3949 Adonis Dr., Salt Lake City, Utah 84117

Filed Jun. 29, 1977, Ser. No. 811,115

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—447 **11 Claims**

1. A solar panel comprising:

a framework comprising a back and a plurality of sidewalls defining an open-face, box-like structure;

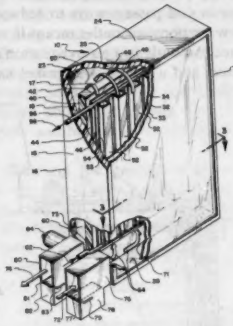
a transparent closure mounted to the open face of said framework;

divider means inside said structure spaced between and generally parallel to said back and said transparent closure, said divider means forming an air return with the back;

a solar energy absorption plate mounted adjacent said divider means in said framework and enclosed by said transparent closure;

a plurality of air ducts mounted on said solar energy absorption plate so as to be in heat exchange relationship therewith;

said air ducts each having an open end in communication with said air return; and



a plurality of conduits for transporting liquid through said solar panel, each said conduit being joined in heat exchange relationship to said solar energy absorption plate and to one of said air ducts.

4,207,868

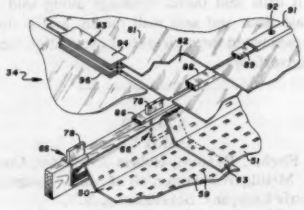
SOLAR ENERGY SYSTEM

Roger A. Peterson, 1088-25th Ave. S.E., Minneapolis, Minn. 55414

Filed Feb. 27, 1978, Ser. No. 881,703

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—449 **29 Claims**



1. An apparatus for collecting solar energy comprising: frame means having an air passage, an inlet for directing air into the passage, and an outlet for carrying air from the passage, said frames including elongated laterally spaced members providing an elongated air passage between adjacent members, said inlet located at one end of the air passage, and said outlet located at the other end of the air passage, transparent means mounted on the frame means to cover the passage, solar energy absorption means located in the air passage for heating the air in the passage, said solar energy absorption means including a plurality or sheet members extended across the air passage, and along the length of the air passage, said sheet members arranged in an ascending stepped relationship from adjacent the inlet to adjacent the outlet, each sheet member having outwardly directed side flanges adjacent sheet members having ends spaced from each other to allow limited flow of air between said adjacent ends, means on at least one of said ends of each adjacent sheet member to space said ends from each other, means on the parallel spaced members engageable with the side flanges supporting the sheet members end-to-end on the frame means in different substantially parallel planes to locate adjacent sheet members in said ascending stepped relation relative to each other, said means on the parallel spaced members comprising a plurality of holders mounted on the members, each holder having side walls with spaced ribs forming grooves to accommodate the flanges of the sheet members,

each sheet member having a plurality of openings allowing air to flow through the sheet members as the air moves through the passage from the inlet to the outlet.

4,207,869

SOLAR COLLECTOR CONSTRUCTION

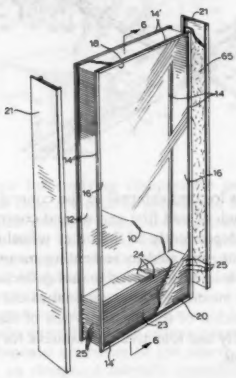
Douglas R. S. Hart, 886 Palmerston Ave., Toronto, Ontario, Canada (M6G 2S2)

Filed May 22, 1978, Ser. No. 908,541

Claims priority, application United Kingdom, May 24, 1977, 21925/77

Int. Cl.² F24J 3/02

U.S. Cl. 126—450 **18 Claims**



10. A solar collector construction, comprising:

two spaced-apart rigid panels having aligned peripheral edges that include opposed straight side edges,

longitudinal members for the side edges of each panel, each longitudinal member having a first slot for receiving the edge of the respective panel and a second slot at right angles to the first slot, the second slots of adjacent longitudinal members on aligned side edges of panels opening toward each other,

a plurality of vertically spaced bar elements along each pair of aligned side edges, each bar element spanning between the two panels and having its ends in the second slots of respective longitudinal members,

a flexible web having a width substantially the same as the spacing between the panels, the web being strung boustrophedonically around the bar elements between the panels, thereby defining a plurality of horizontally elongated adjacent chambers,

means restraining the adjacent pairs of longitudinal members against separating,

and means closing the ends of the chambers.

4,207,870

BLOOD SAMPLING ASSEMBLY HAVING POROUS VENT MEANS VEIN ENTRY INDICATOR

William N. Eldridge, Rutherford, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Jun. 15, 1978, Ser. No. 915,670

Int. Cl.² A61B 5/14

U.S. Cl. 128—766 **10 Claims**

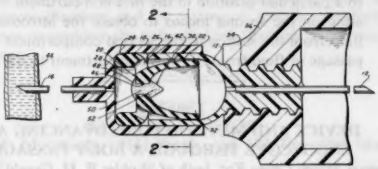
1. A multiple blood sampling assembly adapted to be coupled with an evacuated container to obtain blood samples from a patient, comprising:

a housing having a forward end and a rear end and having a chamber therein, the chamber having walls which are at least partially translucent;

a first cannula mounted to a forward end of the housing and in fluid communication with the chamber;

a second cannula mounted to the rear end of the housing and in fluid communication with the chamber;

a cup chaped one-way valve positioned within the chamber and having a resilient skirt which sealingly bears against the walls of the chamber when blood flows under tourniquet pressure from said first cannula; and



venting means in the form of a porous material within said chamber, said venting means positioned within said chamber such that blood may flow under tourniquet pressure from the first cannula into the chamber only up to the point where the one-way valve is located as gas is displaced through the venting means, the venting means also positioned such that gas is displaced from a portion of the chamber on a side of the valve towards the first cannula, through the venting means, and to the atmosphere via the second cannula.

4,207,871

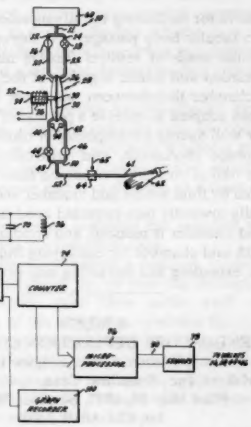
SYSTEM FOR CONTROLLING THE FLOW OF INTRAVENOUS FLUIDS TO A PATIENT

Jon A. Jenkins, Rancho Santa Fe, Calif., assignor to Imed Corporation, San Diego, Calif.

Filed Jun. 7, 1978, Ser. No. 913,294

Int. Cl.² A61M 5/00, 1/03

U.S. Cl. 128—214 R **36 Claims**



1. In combination in a system for providing a controlled introduction of fluid from a source to a patient,

first means for storing the fluid, the first means including first and second compartments and a diaphragm separating the compartments and movable in the first means to vary the volumes of the first and second compartments,

second means operatively coupled to the first and second compartments for providing a first times for the introduction of fluid from the source to the first compartment and the passage of fluid from the second compartment to the patient and at other times for the introduction of fluid

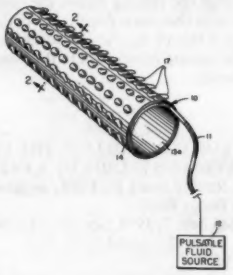
from the source to the second compartment and the passage of fluid from the first compartment to the patient, and third means responsive to the movement of the diaphragm to a particular position in the second compartment for operating on the second means to obtaining the introduction of fluid from the source to the first compartment and the passage of fluid from the second compartment to the patient and responsive to the movement of the diaphragm to a particular position in the first compartment for operating on the second means to obtain the introduction of fluid from the source to the second compartment and the passage of fluid from the first compartment to the patient.

4,207,872

DEVICE AND METHOD FOR ADVANCING AN ENDOSCOPE THROUGH A BODY PASSAGE

Samuel Meiri; Casey Kot, both of Skokie; B. H. Gerald Rogers, Chicago, and Max Epstein, Highland Park, all of Ill., assignors to Northwestern University, Evanston, Ill.

Filed Dec. 16, 1977, Ser. No. 861,113
Int. Cl.[2] A61B *1/00*; A61M *25/00*
U.S. Cl. 128—4 **25 Claims**



1. A sleeve for facilitating the advancement of an endoscope through a tubular body passage, said sleeve having inner and outer tubular walls of resilient flexible material disposed in coaxial relation and joined together at their opposite ends to define a chamber therebetween, said inner tubular wall defining a lumen adapted to receive a portion of an endoscope and said outer wall having a multiplicity of resilient hollow protrusions disposed thereabout, said protrusions extending rearwardly as well as outwardly from said sleeve when said sleeve is expanded by fluid within said chamber and collapsing generally radially inwardly into retracted condition when said fluid within said chamber is reduced, and conduit means communicating with said chamber for conveying fluid to and from said sleeve for extending and retracting said protrusions.

4,207,873

ENDOSCOPE DEFLECTION CONTROL

Theodore A. Kruy, Weston, Conn., assignor to American Cystoscope Makers, Inc., Stamford, Conn.

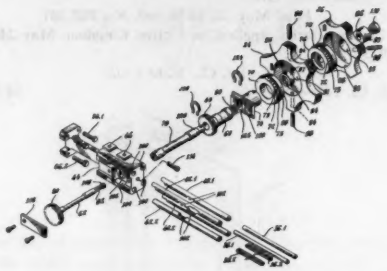
Filed May 16, 1977, Ser. No. 797,413
Int. Cl.[2] A61B *1/00*
U.S. Cl. 128—6 **19 Claims**

1. A deflection control for a flexible endoscope having a control housing on its proximal end and a deflectable section at its distal end, with deflection operated by cable means extending from proximal to distal end and a manual deflection control means comprising

a proximal control head shaped and sized for single-hand gripping and operation of controls placed thereon, said control head being provided on one side thereof and externally thereto with first and second deflection control wheels mounted for rotation to the control head;

means for coupling said first and second control wheels to said deflection control cables for deflection of the distal end of the endoscope in response to wheel rotation;

incrementing means located externally to the control housing for enabling uniform small incremental rotational motions of each of said first and second control wheels with stable fixed wheel positions between such incremental motions; and



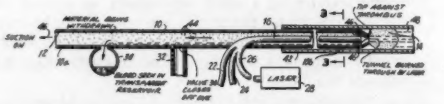
engaging means located external to the control housing for permitting each of said first and second control wheels to be moved independently of the other wheel into and out of engagement with said incrementing means while said control wheels remain coupled to said deflection cables by said coupling means, whereby continuous and incremental deflection control of the distal portion of the endoscope are individually and selectively obtainable for each of said control wheels.

4,207,874

LASER TUNNELLING DEVICE

Daniel S. J. Choy, 892 Riverbank Rd., Stamford, Conn. 06903

Filed Mar. 27, 1978, Ser. No. 890,353
Int. Cl.[2] A61B *1/06*; B23K *9/00*
U.S. Cl. 128—6 **2 Claims**



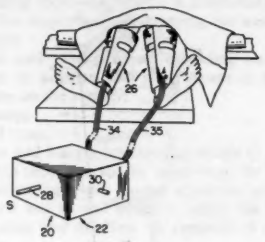
1. A device for locating, viewing and removing an obstruction in a tube comprising, in combination: an elongated sheath having distal and proximal ends; a head defining a head opening at said distal end; a fiberoptic bundle through a portion of said sheath, connected to said head and having a viewing bundle portion for use in viewing said obstruction, a laser bundle portion for use in removing said obstruction and a light source bundle portion usable with said viewing bundle portion for viewing said obstruction, said bundle portions terminating at said head opening and therewith defining a suction inlet; said bundle and said sheath together defining an annular space therebetween; a suction opening at said proximal end; an indicating substance connection opening to said annular space intermediate said ends for use in locating said obstruction by conducting an indicating substance to said obstruction; and, a transparent end of removal indicating reservoir proximate said proximal end.

4,207,875

COMPRESSION DEVICE WITH KNEE ACCOMMODATING SLEEVE

Edward J. Arkans, Schaumburg, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Jan. 12, 1979, Ser. No. 2,825
Int. Cl.[2] A61H *1/00*
U.S. Cl. 128—24 R **4 Claims**



1. A device for applying compressive pressures against a patient's limb from a source of pressurized fluid, comprising:

an elongated pressure sleeve for enclosing a length of the patient's limb, said sleeve having a plurality of laterally extending separate fluid pressure chambers progressively arranged longitudinally along the sleeve from a lower portion of the limb to an upper portion of the limb proximal the patient's heart relative to said lower portion, and a laterally extending knee region intermediate longitudinally disposed chambers of the sleeve, said knee region having an elongated laterally extending opening to enhance flexibility of the sleeve in said knee region, said sleeve having a pair of opposed side edges, and said opening being located in a lateral central region of the sleeve intermediate said side edges; and

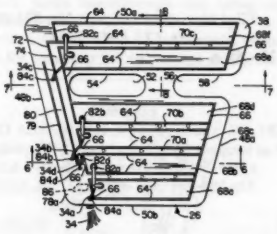
control means for intermittently inflating and deflating said pressure chambers.

4,207,876

COMPRESSION DEVICE WITH VENTILATED SLEEVE

Larry D. Annis, Elgin, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Jan. 12, 1979, Ser. No. 2,826
Int. Cl.[2] A61H *1/00*
U.S. Cl. 128—24 R **6 Claims**



1. A device for applying compressive pressures against a patient's limb from a source of pressurized fluid, comprising:

an elongated pressure sleeve for enclosing a length of the patient's limb, said sleeve having a plurality of laterally extending separate fluid pressure chambers progressively arranged longitudinally along the sleeve from a lower portion of the limb to an upper portion of the limb proximal the patient's heart relative to said lower portion, and ventilation means comprising a plurality of laterally extending ventilation channels having a width substantially less than the width of said chambers, with said ventilation channels having opening means for facing the patient's limb, and with said ventilation channels being located intermediate different pairs of adjoining pressure chambers, and said ventilation means having a connecting channel extending along the side of said pressure chambers and communicating with said ventilation channels; and

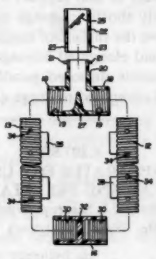
control means for intermittently inflating and deflating said pressure chambers and for passing air into the ventilation means to ventilate the patient's limb through said opening means.

4,207,877

BATHTUB AERATOR

Arthur F. Marquardt, 18141 Frank, Apt. 102, Roseville, Mich. 48066

Filed Apr. 17, 1978, Ser. No. 896,833
Int. Cl.[2] A61H *9/00*
U.S. Cl. 128—66 **4 Claims**



1. A bathtub aerator for blowing pressurized air within a water filled bathtub for agitating water, comprising:

a pair of elongated, flexible tubes coupled together at their opposite ends to form a flexible tubular loop arranged upon and encircling the floor portion of a bathtub;

numerous, spaced apart holes formed in each tube along the length thereof;

a T-shaped, tubular connector having aligned tubular legs interconnected with adjacent tube ends for coupling the tubes together at one end and with a tubular stem interconnected with one end of an elongated pressurized air inlet pipe, opposite end is connected to a source of pressurized air;

and a tubular connector coupling the opposite tube ends together to form the complete loop;

said T-shaped connector having a centrally located divider wall arranged to divide the air entering through the stem into two roughly equal flow paths, each extending through a leg of the connector, whereby the pressurized air blows approximately equally out of each of the tubes into the bath water for relatively uniformly agitating the water for massaging the bathtub occupant;

said tubes being externally corrugated in a thread-like configuration for increased flexibility;

and said connector being internally threaded with opposed left and right hand threads, so that the ends of the tubes may be simultaneously threadedly engaged within connector for coupling the tube ends together;

and spaced apart suction cups mounted said tubes for temporarily fastening the tubes in place upon the bathtub bottom surface;

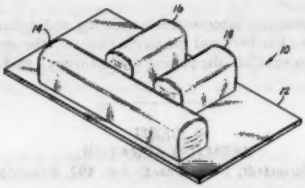
said suction cups being formed with suction depressions which are transversely narrow and longitudinally elongated relative to the tube axes, for facilitating manual release from the bathtub surface by pulling the tubes longitudinally and upwardly relative to the bathtub.

4,207,878

BACK PAIN RELIEVER

Zelmer L. Duncan, 2005 Catalina Ave., Santa Ana, Calif. 92701

Filed Dec. 29, 1978, Ser. No. 974,314
Int. Cl.[2] A61H 7/00
U.S. Cl. 128—67 10 Claims



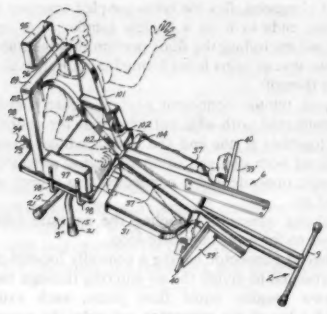
1. A pain relieving device comprising,
support means having a surface,
an elongated massage element affixed to and extending above the surface of said support means, and
a pair of relatively shorter massage elements affixed to and extending above the surface of said support means in close proximity to said elongated massage element,
said shorter elements disposed parallel to each other and normal to said elongated massage element.

4,207,879

THERAPEUTIC APPARATUS FOR USE IN TREATMENT OF MUSCULAR AND SKELETAL DISORDERS

Gary J. Safadago, Box 133, Startup, Wash. 98293, and Truxton B. Troxell, Seattle, Wash., assignors to Gary J. Safadago, Seattle, Wash.

Filed Aug. 4, 1976, Ser. No. 711,469
Int. Cl.[2] A61F 5/00
U.S. Cl. 128—70 4 Claims



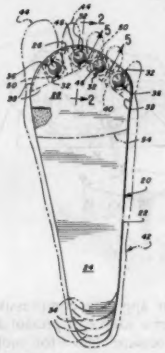
1. In therapeutic apparatus for use in treatment of muscular and skeletal disorders including an elongated frame, frame head end supporting means, frame foot end supporting means, trunk supporting means carried by the head end portion of the frame, leg supporting means and foot holding means, the improvement comprising the trunk supporting means forming a seat, a seat back facing the frame foot end supporting means, and means for removably mounting said seat back on the frame, the leg supporting means supporting leg backs, lateral leg supporting means carried by the leg supporting means and including two elongated leaves extending generally lengthwise of the frame, hinge means connecting together the respective leaf ends closer to the frame head end, means for securing the leaves in selected swung positions about the hinge means, each leaf carrying independently movable means for supporting and clamping a foot.

4,207,880

COMBINATION CORRECTIVE TOE SEPARATOR APPARATUS AND PEDICURE AID

K. Helen Zinkovich, 6030 N. Sheridan Rd., Chicago, Ill. 60660

Filed Jul. 13, 1978, Ser. No. 924,195
Int. Cl.[2] A61F 5/00
U.S. Cl. 128—81 R 10 Claims



1. A toe separator apparatus comprising a pliable and substantially non-elastic sole member extending substantially the width of the user's foot and having a plurality of slits formed therethrough near the toe end thereof, a plurality of separate elements operable to be selectively and detachably fastened in upstanding fashion in said sole member, said elements characterized as having an upper portion around which a user's toes can be comfortably placed, said upper portions being interconnected by a reduced diameter portion to a disc-shaped lower base portion, said lower base portion being of larger diameter then said reduced diameter portion, whereby said disc portion is operable to be inserted through said slits in said sole member and the reduced diameter portion gripped thereby such that said toe separator element is detachably retained in said sole member.

4,207,881

HEADGEAR FOR SUPPORT OF BROKEN JAWS DURING HEALING

Alice E. Richter, 260 N. Cache, P.O. Box 1901, Jackson, Wyo. 83001

Filed Nov. 23, 1977, Ser. No. 854,098
Int. Cl.[2] A61F 5/04
U.S. Cl. 128—89 A 3 Claims

1. A removable headgear for attachment about the head of a person and for supporting the person's lower jaw for use in assisting in treatment of bone spurs and setting of broken jaws or other facial bones, the improvement comprising:
a headband for fitting about the wearer's head;

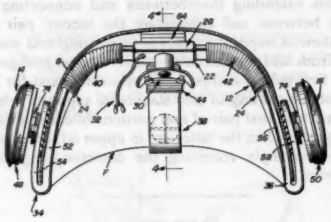
adjustment means for varying the circumference of the headband;
skull support means extending across the headband;
means depending from the headband and including strap means extending downwardly for support of the lower jaw of the wearer;
said means depending from the headband also including adjustable ends attachable with cooperative means mounted on the headband for varying the length of the depending means to provide a comfortable snug attachment for supporting and engaging the wearer's face;
a chin pad;
said chin pad having means extending outwardly of the wearer to position said strap means in a non-irritating position on the wearer;
a first strap;
a second strap;
said chin pad having intersecting means to criss-cross said first and second straps for supporting the lower jaw;
said intersecting means having adjustable means for sliding the first and second straps to adjust the location of the chin strap and to allow for removal of the intersecting means.

4,207,882

FILTER APPARATUS FOR WELDING MASK

Cordell T. Lemere, P.O. Box 7296, Olympia, Wash. 98507

Filed Mar. 16, 1978, Ser. No. 887,111
Int. Cl.[2] A61F 9/06; A62B 7/10
U.S. Cl. 128—206.15 **11 Claims**



1. An air filtering apparatus for a face mask including airway passage means for transmitting and passing filtered air, connector means attached to the airway passage means for removably mounting the airway passage means on a face mask, the connector means including a plurality of hollow U-shaped clips forming air flow paths therethrough and being part of the airway passage means, the clips each having a pair of legs arrangeably embracing an edge and on spaced sides of a face covering mask for retaining the air passage means on the mask.

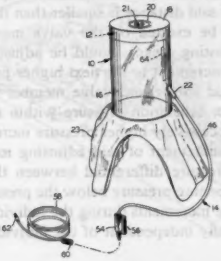
4,207,883

HOOD ASSEMBLY WITH NOISE FILTER

Harry A. Shindler, West Hartford, Conn., assignor to Nuclear & Environmental Protection, Inc., Hartford, Conn.

Filed Jul. 14, 1978, Ser. No. 924,654
Int. Cl.[2] A62B 17/04
U.S. Cl. 128—201.22 **19 Claims**

1. In an environmental control hood assembly, the combination comprising:
A. a headpiece assembly including
1. a headpiece dimensioned to receive the user's head therewithin and having a top wall and a sidewall, said headpiece being transparent at least about a portion of the sidewall thereof, said headpiece including a support member having a surface positioned below and in spaced relationship to said top wall to define a chamber therebetween, said support member being secured to a wall of said headpiece and being pervious to air about at least a portion of the surface thereof to permit air to flow from said chamber into the remainder of the space defined by said headpiece;
2. a noise filter subassembly disposed in said chamber and including
a. a silencer member having an inlet at one end, a closed wall at the opposite end and an air-permeable wall portion therebetween;
b. a foam member encasing said silencer member and fabricated of an air-permeable synthetic resin open cell foam;



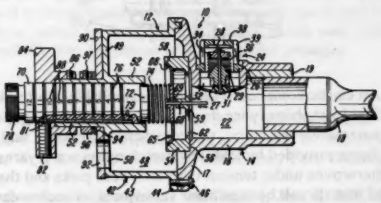
B. air supply conduit means connected at one end to said inlet of said silencer member and extending outwardly of said headpiece assembly for connection to a source of air under superatmospheric pressure,
whereby air supplied to said headpiece assembly through said air supply conduit means must pass first through said air-permeable wall portion of said silencer member and thence said air-permeable foam member with resultant reduction in the sound level of the supplied air.

4,207,884

PRESSURE CONTROLLED BREATHING APPARATUS

Max Isaacson, 125 Sunrise Pl., Dayton, Ohio 45407

Continuation-in-part of Ser. No. 752,183, Dec. 20, 1976, abandoned. This application Jul. 17, 1978, Ser. No. 925,173
Int. Cl.[2] A61M 16/00
U.S. Cl. 128—200.24 **4 Claims**



1. In apparatus for controlling an individual's exhalation and including a body defining a chamber having an inlet and an outlet, means for directing the individual's exhalation into said inlet, an exhalation pressure responsive control valve within said chamber for controlling the flow of exhalation gas through said inlet and outlet to atmosphere, said valve including an annular valve seat and a generally flat valve member, means supporting said valve member for axial movement between a closed position engaging said valve seat and an open position spaced from said valve seat, a compression coil spring biasing said valve member towards said closed position, and means for adjusting the axial force exerted by said spring against said valve member, the improvement for adapting said apparatus to be used in pulmonary therapy, wherein said coil spring has a spring rate less than 0.2 pound per inch, said adjusting means for said spring include a series of uniformally spaced indicators corresponding to a series of progressively

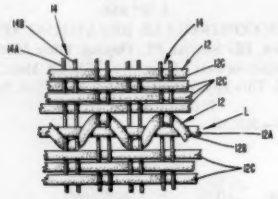
increasing uniform pressure increments and providing for selecting a predetermined exhalation pressure corresponding to the opening pressure at which said valve member moves from said valve seat to an open position, wherein said adjusting means having said pressure increments, the spring, the valve member and the valve seat are designed such that during an exhalation phase, for each said pressure increment selected, the valve member will move from the valve seat to said open position a distance causing sufficient annular area between the valve member and valve seat that the differential force against the valve member caused by exhalation flow required to move the valve member said distance is smaller than the differential force that would be exerted on the valve member by said spring if said adjusting means would be adjusted from said selected pressure increment to the next higher pressure increment, whereby said spring and valve member cooperate to limit the maximum exhalation pressure within said chamber below the next successively higher pressure increment to said selected pressure increment of said adjusting means and for maintaining the pressure differential between the maximum pressure and the opening pressure below the pressure differential of said pressure increments during the individual's exhalation and substantially independent of the individual's exhalation flow rate.

4,207,885

WOVEN ELASTIC COMPRESSION BANDAGE

Richard Hampton, Clemmons, and P. Frank Hanes, Jr., Winston-Salem, both of N.C., assignors to Carolon Company, Winston-Salem, N.C.

Filed Mar. 7, 1979, Ser. No. 18,147
Int. Cl.[2] A61L *15/00*; D03D *23/00*
U.S. Cl. 128—156 **7 Claims**



1. An elastic compression bandage extendable to a tensioned length at least about twice its relaxed length and being formed by a narrow woven fabric, the contraction power of said bandage being provided by textured stretch nylon warp yarns that are interwoven under tension with weft yarn picks and that are bulked and shrunk by treatment subsequent to such weaving, said fabric comprising:

a plurality of weft yarn picks in the range of from about 10 to about 16 picks per inch of tensioned length of the as-woven fabric; and

a plurality of warp yarns disposed across the entire width of the fabric with a density in the range of from about 30 to about 40 yarns per inch of width of the as-woven fabric, each warp yarn being stretchable and formed of textured stretch nylon, the total deniers of each warp being in the range of from about 210 to about 560;

said plurality of warp yarns including spaced apart pairs of leno warps and groups of non-leno warps between said pairs of leno warps, with

the ratio of leno pairs to non-leno warp yarns being in the range of from about 1/6 to 1/14 and

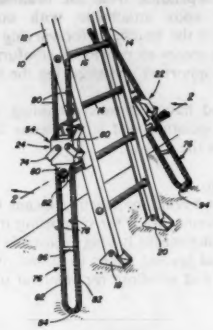
the non-leno warp yarns and the weft yarn picks being interwoven in a 1×1 weave.

4,207,886

LADDER ADJUSTING AND STABILIZING APPARATUS

Virgil H. Sorenson, P.O. Box 198, Staffordville, Conn. 06077

Filed Apr. 13, 1979, Ser. No. 29,971
Int. Cl.[2] E06C *1/04, 5/36*
U.S. Cl. 182—172 **15 Claims**



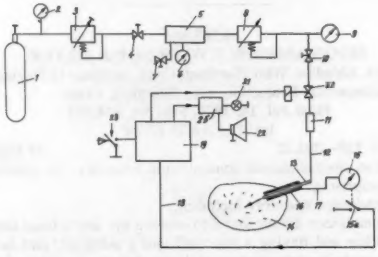
1. In combination with an upstanding ladder including opposite side rails interconnected by a plurality of spaced rungs extending and secured therebetween at points spaced therealong, a pair of mounts carried by said opposite side rails, a pair of elongated stabilizing supports each including a pair of generally parallel arms having a first pair of end portions free of connections extending therebetween and connecting means extending between and connecting the second pair of end portions thereof, supporting means supporting said stabilizing supports from said mounts in upwardly convergent positions, with said first pair of end portions uppermost and for lengthwise adjustable shifting of said stabilizing supports relative to said mounts, said first pair of end portions of each of the stabilizing supports, when the latter are in upper adjusted positions thereof, embracingly receiving the corresponding side rail therebetween.

4,207,887

GAS INSUFFLATION APPARATUS

Siegfried Hiltebrandt, Knittlingen, and Helmut Wurster, Oberderdingen, both of Fed. Rep. of Germany, assignors to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

Continuation of Ser. No. 729,167, Oct. 4, 1976, abandoned. This application Jun. 26, 1978, Ser. No. 919,375
Claims priority, application France, Jun. 1, 1977, 77 16683
Int. Cl.[2] A61M *13/00*
U.S. Cl. 128—207.28 **15 Claims**



1. A gas insufflation apparatus for filling a body cavity with intracorporeal insufflating gas at a constant pressure level and maintaining the pressure of the gas within the body cavity constantly at a single fixed pre-selected pressure level, said apparatus comprising:

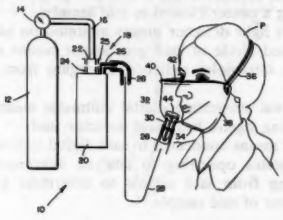
(a) a source of compressed insufflating gas which is either carbon dioxide or nitrous oxide;
(b) an insufflation duct connected to said compressed gas source and canula means connected to said insufflation duct insertable into the body cavity for introducing the gas thereinto;
(c) measuring duct means insertable into the body cavity or receiving gas from the body cavity thereby to measure the intracorporeal gas pressure;
(d) a solenoid valve interposed in said insufflation duct and electrical circuit means for automatically controlling said solenoid valve for admitting a flow of the compressed gas, and shutting off the flow of compressed gas, in said insufflation duct;
(e) a variable pressure regulator interposed in the insufflation duct between the source of compressed gas and said valve by means of which a desired body cavity pressure may be pre-selected; and
(f) pressure sensitive switch means responsive to pressure in said measuring duct and having normally open contacts interposed in said circuit means said contacts being set to close at a predetermined intracorporeal pressure thereby completing the circuit to said solenoid valve solely in response to an upper deviation from said predetermined pressure of the gas in said body cavity.

4,207,888

BAFFLE DEVICE FOR FACE TENT

Lidia S. Ghormley, P.O. Box 119, Sonora, Calif. 95370

Filed Oct. 20, 1978, Ser. No. 953,003
Int. Cl.[2] A61M *15/00*
U.S. Cl. 128—203.29 **2 Claims**



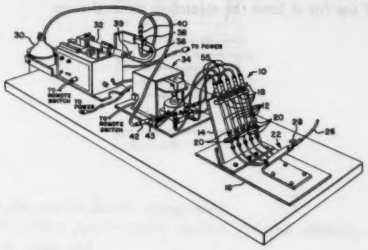
1. For use in an aerosol therapy system including:
a pressurized source of oxygen;
a nebulizer device connected to said source;
a face tent adapted to be worn by a patient with sealing edges thereof held snugly against the sides of the patient's face and under the chin, and other edges thereof extending laterally across the patient's cheeks and nose but in spaced relation thereto; and
a large bore fluid inlet connection at the bottom portion of said face tent terminating at a port opening therein; and
a large bore tubing connecting said nebulizer to said face tent fluid inlet;
a flow baffle comprising;
a flow diverter in said face tent including a disc covering the port opening and spaced therefrom so that fluid flowing through said port opening is diverted radially in all directions without being materially impeded; and
holding means comprising a plurality of vanes extending normal to said disc, the outer edges of said vanes being snugly slidable received in said fluid inlet and retained in place therein by friction.

4,207,889

INJECTION SYSTEM FOR SUSPENSION AND SOLUTIONS

Clarence M. Oloff; Willi J. Buehring, both of Dayton, and Kevin J. Greenlees, Fairborn, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 27, 1978, Ser. No. 955,296
Int. Cl.[2] A61J *7/00*
U.S. Cl. 128—213 R **4 Claims**



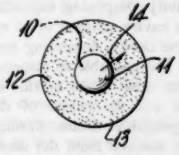
1. An apparatus for injecting suspensions and solutions into a test subject supply line, comprising: a cartridge support member; a plurality of cartridges secured to said support member; a coalescing disc having a single outlet passage connected to a plurality of inlet passages; means for connecting said test subject supply line to the single outlet passage of the coalescing disc; means for connecting each of said cartridges to one inlet of said coalescing disc; means for selectively supplying a measured amount of carrier solution sequentially to said cartridges to carry the suspension and solutions therein through the coalescing disc into the test subject supply line; said means for supplying carrier solution sequentially to the cartridges includes a sequencer having a cylinder block with one inlet passage and a plurality of outlet passages; means for connecting said outlet passages to said cartridges; means for sequentially connecting said inlet passage to said outlet passages and means for supplying measured amounts of solution to said inlet passage; said means for sequentially connecting said inlet passage to said outlet passages including a cylinder positioned within said cylinder block; said cylinder including a passage adapted to sequentially connect said inlet passage to said outlet passages; means for stepping the passage within said cylinder sequentially into alignment with said outlet passages.

4,207,890

DRUG-DISPENSING DEVICE AND METHOD

Ronald C. Mamajek, Glenside, Pa., and Ernest S. Moyer, Grafton, W. Va., assignors to McNeilab, Inc., Fort Washington, Pa.

Continuation-in-part of Ser. No. 756,654, Jan. 4, 1977. This application Sep. 21, 1978, Ser. No. 944,518
Int. Cl.[2] A61D *7/00*
U.S. Cl. 128—223 **9 Claims**



1. A drug dispensing device for controlled and prolonged internal administration of a drug to a predetermined size and species of warm-blooded animal which comprises:
(a) a collapsed, expandable, imperforate envelope made of a

substantially non-hydratable, body fluid permeable, drug-permeable polymer film;

(b) drug metering means containing said drug and retained by said polymer envelope, whereby drug is dispensed at a predetermined rate; and

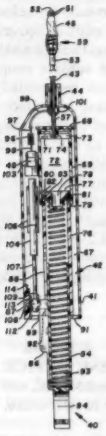
(c) an effective expanding amount of an expanding agent contained within said polymer envelope, the combination of which agent and which drug when in contact with body fluids cause said polymer envelope to expand to a volume such that the device is retained in the environment of use for at least the minimum desired time.

4,207,891

DISPENSING INSTRUMENT WITH SUPPORTED BALLOON

Lee R. Bolduc, St. Petersburg, Fla., assignor to Population Research Incorporated, Clearwater, Fla.

Filed Oct. 10, 1978, Ser. No. 950,170
Int. Cl.[2] A61M *1/00*
U.S. Cl. 128—235 **28 Claims**



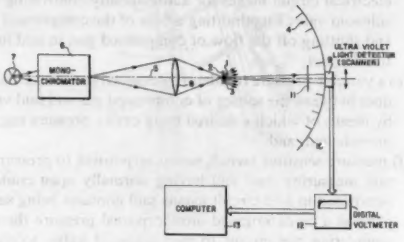
1. An instrument for placing material into both canals of the Fallopian tubes of a female having a uterus with a uterine cavity in communication with the canals of the Fallopian tubes, said uterus having a cervical opening in communication with the uterine cavity comprising: expandable means positionable in the uterine cavity adapted to be enlarged to substantially fill the uterine cavity, dispensing means supporting the expandable means and operable to dispense material into the uterine cavity in an area of the uterine cavity between the expandable means and the canals of the Fallopian tubes whereby said expandable means during the enlargement thereof moves the material from the uterine cavity into the canals of the Fallopian tubes, and means cooperating with said expandable means to support at least a part of said expandable means to prevent the expandable means from moving through the cervical opening leading to the uterine cavity during the enlargement of the expandable means.

4,207,892

METHOD AND APPARATUS FOR THE DIAGNOSIS OF TISSUE SAMPLES

Arnold Binder, Bernhardstrasse 21, 8750 Aschaffenburg, Fed. Rep. of Germany

Filed Aug. 23, 1978, Ser. No. 935,880
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1977, 2741068
Int. Cl.[2] A61B *6/00*
U.S. Cl. 128—665 **13 Claims**



1. Apparatus for the histological diagnosis of tissue samples, utilizing solid tissues samples particularly for effecting a quick diagnosis of tumors, comprising:

a pair of planar plates transparent to ultraviolet light for pressing therebetween a solid tissue sample to be diagnosed;

a source of ultraviolet light arranged to direct said light through said tissue sample pressed between said glass plates;

convergent lens means located between said tissue sample and said light source;

monochromator means having an exit slit projected onto said sample by said lens means;

goniometer means having a movable graduated circle and defining a center located in said sample;

ultraviolet light detector means mounted on said movable graduated circle of said goniometer means arranged to receive ultraviolet radiation emerging from said tissue sample;

time-interval integrating digital voltmeter means receiving measuring signals from said detector; and

computer means connected to said digital voltmeter means;

said apparatus operating to analyze ultraviolet radiation emerging from said sample to determine a diagnostic parameter of said sample.

4,207,893

DEVICE USING HYDROPHILIC POLYMER FOR DELIVERING DRUG TO BIOLOGICAL ENVIRONMENT

Alan S. Michaels, San Francisco, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Division of Ser. No. 828,473, Aug. 29, 1977. This application Dec. 26, 1978, Ser. No. 972,958
Int. Cl.[2] A61M *31/00*
U.S. Cl. 128—260 **5 Claims**

1. A Drug delivery device comprising:

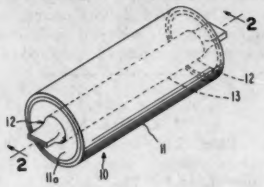
(a) a drug

(b) a housing having a shape-retaining wall defining an internal space and an opening connecting the space with the exterior of the device, said housing formed of a member selected from the group consisting of a fluid permeable and microporous polymers;

(c) a container in the housing, the container consisting essentially of a collapsible wall surrounding a reservoir for storing the drug and a passageway that projects through the opening for delivering drug from the container to the exterior of the device, said container formed of a material selected from the group consisting of natural rubber,

gutta, percha, cyclised rubber, synthetic rubber, isoprene rubber, butadiene rubber, styrene-butadiene rubber, nitrile rubber, chloroprene rubber and ethylene-propylene rubber;

(d) a laminate in the housing, the laminate surrounding the container and comprising a lamina of an absorbent material and a lamina of a swellable hydrophilic polymer, said laminate capable of imbibing fluid into the housing through the polymer thereby causing the laminate to expand and exert pressure on the container which collapses said container and concomitantly pumps drug through the passageway from the device at a controlled rate over a prolonged period of time.



4,207,894

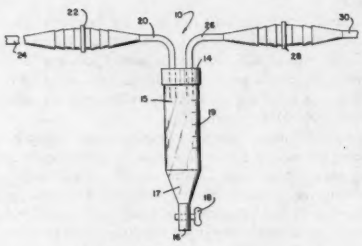
PEDIATRIC SUCTION RECEPTACLE

Victoria A. Sinkel, 84 Shawsheen Rd., Pinehurst, Mass. 01866

Filed Nov. 6, 1975, Ser. No. 628,127

Int. Cl.[2] A61M *1/00*

U.S. Cl. 128—276 **9 Claims**



1. Pediatric suction receptacle apparatus comprising a small chamber having closed upper and lower ends, an upper wall, a downward extending wall connected to the ends, and an emptying spigot means connected to the lower end of the chamber for releasing fluid from the lower end, first and second tubes having proximal ends connected to the upper wall for communication between the chamber and the tubes and first and second connection means mounted on distal ends of the respective first and second tubes for connecting the first tube to a source of reduced pressure and for connecting the distal end of the second tube to a source of patient's fluids, wherein the lower end of the small chamber further comprises a downward and inward sloping wall connected to a lower edge of the downward extending wall, and a downward extending neck connected to a lower edge of the downward and inward sloping wall, the neck having an interior passageway, and wherein the spigot means is mounted in the neck in selective blocking relationship to the passageway, whereby the passageway is closed and opened by the spigot means for closing and draining selectively the chamber.

4,207,895

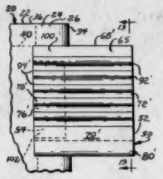
DIAPER WITH EXTENSIBLE FASTENER

Charles H. Schaar, Lake Zurich, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 880,260, Feb. 22, 1978, Pat. No. 4,158,363, which is a continuation of Ser. No. 752,495, Dec. 20, 1976, abandoned. This application Dec. 11, 1978, Ser. No. 968,238

Int. Cl.[2] A61F *13/16*

U.S. Cl. 128—287 **6 Claims**



1. A disposable diaper, comprising:

an absorbent pad assembly having opposed surfaces, and a side edge; and

a tape fastener comprising, tape means having a first portion attached to one of said surfaces of the pad assembly adjacent said side edge, and a securement portion extending between the side edge of the pad assembly and an outer edge of the tape means for securing the diaper about an infant, said tape means being laterally extensible between a reduced to expanded lateral configuration in a location extending the length of the securement portion.

4,207,896

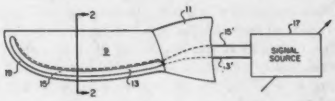
SURGICAL INSTRUMENT HAVING SELF-REGULATING DIELECTRIC HEATING OF ITS CUTTING EDGE

Robert F. Shaw, 50 St. Germain, San Francisco, Calif. 94114

Continuation-in-part of Ser. No. 534,756, Dec. 2, 1974, Pat. No. 4,089,336, which is a continuation of Ser. No. 63,645, Aug. 13, 1970, abandoned, which is a continuation of Ser. No. 681,737, Nov. 9, 1967, abandoned. This application Mar. 14, 1975, Ser. No. 558,333

Int. Cl.[2] A61B *17/32*; A61N *3/00*

U.S. Cl. 128—303.1 **4 Claims**



3. A surgical blade for cutting tissue with simultaneous hemostasis, said blade comprising:

a cutting means including a cutting edge having a dielectric means disposed in the region along said cutting edge wherein said dielectric means includes a titanate composition; and

electrode means for establishing an electrical field through said dielectric means in response to an electrical signal applied thereto.

4,207,897
CRYOSURGICAL PROBE

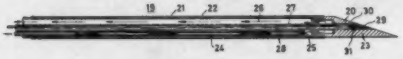
John W. Lloyd, The Gate House, Eynsham, Oxfordshire, England; David E. Wild, Crawley, and Humphry R. Evatt, Stockbridge, both of England, assignors to Spembly Limited, Hampshire and John W. Lloyd, Oxfordshire, both of, England, part interest to each

Filed Jul. 13, 1977, Ser. No. 815,290

Claims priority, application United Kingdom, Jul. 21, 1976, 30351/76

Int. Cl.[2] A61B *17/36*; A61F *7/00*; A61M *7/00*

U.S. Cl. 128—303.1 9 Claims



1. A cryosurgical device comprising a probe having a hollow stem, one end of the stem having means adapted to be connected to a source of cooling fluid and to exhaust, the opposite end of the stem being closed and having a thermally conductive tip adapted to be cooled by means of the cooling fluid which in use flows along the stem, whereby human or animal tissue at the tip may be cooled, said tip providing an exposed electrode, a further electrode separate from said probe and adapted to be applied to a part of said human or animal separate from the tissue to be cooled, and means for applying electrical nerve-stimulating voltages between the said electrodes sufficient to cause an observable muscle response in the human or animal.

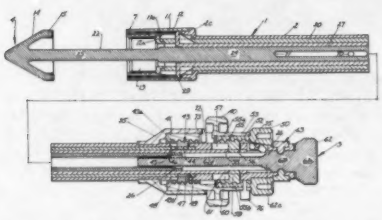
4,207,898
INTRALUMENAL ANASTOMOSIS SURGICAL STAPLING INSTRUMENT

Carl T. Becht, Cincinnati, Ohio, assignor to Senco Products, Inc., Cincinnati, Ohio

Filed Mar. 27, 1978, Ser. No. 890,262

Int. Cl.[2] A61B *17/04*, *17/32*

U.S. Cl. 128—305 17 Claims



1. A surgical stapling instrument for the joining together of tubular body organs, said instrument having distal and proximal ends, said instrument comprising an elongated body, a staple carrier mounted on said body near said distal end of said instrument, at least one annular array of staples together with a staple driver for said at least one array of staples and a cylindrical scalpel being located in said staple carrier, said instrument having a conical anvil located at said distal end of the instrument beyond said staple carrier, an annular anvil plate for clinching the staples of said at least one array, said anvil plate being mounted on said anvil facing said staple carrier, said anvil being axially shiftable between a first position wherein said anvil plate is adjacent said staple carrier and a second position wherein said anvil plate is spaced from said staple carrier, means to shift said anvil, a staple driver actuator located within said instrument body, said staple driver actuator being axially shiftable between a retracted position and a staple driving position wherein said staple driver actuator contacts and shifts said staple driver driving said at least one array of staples from said staple carrier and against said anvil plate, means to shift said staple driver actuator, a scalpel actuator located within said instrument body, said scalpel actuator being shiftable between a retracted position and a scalpel driving position wherein said scalpel actuator contacts and shifts said cylindrical scalpel partway out of said staple carrier toward said distal end of said instrument, means to shift said scalpel actuator and including means to control the sequence of actuation of said anvil shifting means, said staple driver actuator shifting means, and said scalpel actuator shifting means to assure proper sequential operation of said instrument.

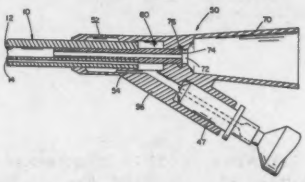
4,207,899
CATHETER

Bhupendra C. Patel, 52 N. Crystal St., Elgin, Ill. 60120, assignor to The Kendall Company, Boston, Mass.

Continuation of Ser. No. 778,051, Mar. 16, 1977, Pat. No. 4,119,099, which is a continuation-in-part of Ser. No. 745,098, Nov. 26, 1976, abandoned. This application Jun. 12, 1978, Ser. No. 914,428

Int. Cl.[2] B61M *25/00*

U.S. Cl. 128—349 B 4 Claims



1. In a catheter having a shaft including a drainage lumen and an eye opening communicating therewith at its distal end, and an inflation lumen and a retention balloon communicating therewith,

a molded connector unit of one-piece construction bonded to the outer surface of said shaft adjacent the proximal end of the latter, said connector unit including a drainage fitting having a bore communicating with said drainage lumen and having an inflation side arm communicating with said inflation lumen

wherein the improvement comprises said connector unit being formed of elastic material, said connector unit having a zone of its wall forming a safety signal balloon, said zone having a wall of diminished thickness with respect to the wall of the adjacent zones on each side thereof, said safety signal balloon communicating with at least one of said inflation lumen or said inflation side arm.

4,207,900
INSERT MOLDED CATHETER AND METHOD

Bhupendra C. Patel, Elgin; Russell J. Schweizer, Crystal Lake, both of Ill., and Jesse C. Smith, St. Petersburg Beach, Fla., assignors to The Kendall Company, Boston, Mass.

Filed Jul. 3, 1978, Ser. No. 921,696

Int. Cl.[2] A61M *25/00*

U.S. Cl. 128—349 B 3 Claims

1. A catheter, comprising:

an elongated shaft having a main lumen extending through the shaft, and an inflation lumen extending through a wall of the shaft, said shaft having a beveled distal end defining a first juncture surface disposed at an acute angle relative to an outer surface portion of the shaft;

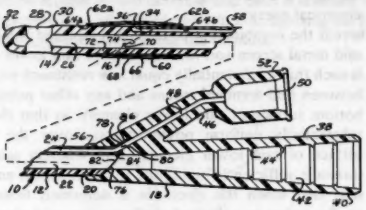
a tip directly molded onto said first shaft juncture surface with said tip having a complementary beveled proximal end defining a first juncture surface bonded to the shaft juncture surface and being disposed at an obtuse angle relative to said outer shaft surface portion, said tip having a lumen communicating with said main lumen of the shaft and at least one opening adjacent a distal end of the tip

communicating with the tip lumen, said proximal beveled portion of the tip defines a distal end portion of the inflation lumen and an aperture at an outer surface of the tip communicating with the inflation lumen;

a sleeve of elastic material secured to the catheter in spaced circumferential zones and defining a cavity communicating with said inflation lumen;

said shaft having a beveled proximal end defining a second juncture surface disposed at an acute angle relative to an outer surface portion of the shaft adjacent the inflation lumen at a proximal end of the shaft, and defining a tapered end portion adjacent the juncture of said outer surface portion and said second juncture surface; and

a connecter directly molded onto said second shaft juncture surface with said connecter having a complementary beveled juncture surface bonded to said second shaft juncture surface, said connecter having a lumen communicating with the main shaft lumen, and a side arm defining an inflation lumen communicating with a proximal end of the inflation lumen, with said tapered shaft portion being outwardly flared and defining a curved proximal end portion of the shaft inflation lumen and joining the inflation lumens of the shaft and connecter.



4,207,901

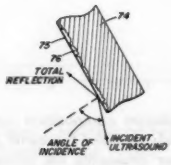
ULTRASOUND REFLECTOR

Anant K. Nigam, Plantation, Fla., assignor to New York Institute of Technology, Old Westbury, N.Y.

Division of Ser. No. 665,898, Mar. 11, 1976, Pat. No. 4,084,582. This application Feb. 6, 1978, Ser. No. 875,442

Int. Cl.[2] A61B 5/00

U.S. Cl. 128—660 **10 Claims**



1. For use in conjunction with an apparatus wherein a focused beam of ultrasonic energy is propagated through a fluid, a reflector suitable for disposing in said fluid to reflect said focused beam, comprising:

a supportive substrate having an optically rough surface;

a thin layer of ultrasonically transmissive material disposed on said substrate; and

a single gaseous layer trapped between said ultrasonically transmissive layer and said substrate, said gaseous layer being contained in the asperities of said substrate surface.

4,207,902

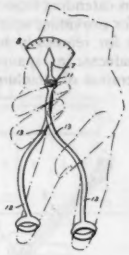
INSTRUMENT AND METHOD OF MEASURING DILATATION OF CERVIX UTERI

Yury Krementsov, 85-11 34th Ave., #2B, Jackson Heights, N.Y. 11392

Filed Nov. 8, 1978, Ser. No. 958,810

Int. Cl.[2] A61B 5/10

U.S. Cl. 128—778 **12 Claims**



1. An instrument for measuring dilatation of cervix uteri during a first stage of labor, comprising

a first and a second elongated arm each having a central portion, a measuring portion extending from said central portion in a first direction, and an indicating portion extending from said central portion in a second direction which is opposite to said first direction, each of said arms having an end which is spaced from a respective one of said central portions, one of said measuring portions being longer than the other portion;

two loops each having an axis and located at the end of a respective measuring portion and thereby at differing distances from a respective central portion, each of said loops being expansible so that fingers of differing thicknesses can be inserted therein;

a scale located at the end of one indicating portion and having a plurality of graduation marks corresponding to different degrees of dilatation of cervix uteri;

an indicating tip provided at the end of the other indicating portion and arranged to point to said graduation marks of said scale; and

means for connecting said arms in the region of said central portion so that said arms move relative to one another in a scissors-like manner between a proximal position in which said loops are located one after the other and their axes substantially coincide so that one finger of a user can be inserted simultaneously into two loops and extend outwardly beyond the same so as to palpate the edge of the orifice of cervix uteri, and a plurality of distal positions in which said loops are spaced from one another and two fingers of the user can be inserted separately into said loops and extend outwardly beyond the same so as to palpate the edge of the orifice by two fingers and to thereby determine by which distance said loops must be withdrawn from one another, said indicating tip in each of said positions pointing to a respective graduation marks of said scale and thereby showing a degree of dilatation.

4,207,903

DEVICE FOR SCREWING BODY TISSUE ELECTRODE INTO BODY TISSUE

Edward G. O'Neill, St. Paul, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 28, 1978, Ser. No. 900,975

Int. Cl.[2] A61N 1/04

U.S. Cl. 128—785 **20 Claims**

1. An assembly for use in attaching an electrode of a body implantable lead to body tissue, said lead being of a type including a flexible insulated electrical conductor having a proxi-

mal end thereof adapted for connection to a medical device and a distal end thereof connected to said electrode, said assembly comprising:

(A) a primary device having proximal and distal ends for remotely effecting the attachment of said electrode to body tissue and including:

1. first means at said distal end thereof for releasably holding a first insulated portion of said electrode lead for remote attachment to body tissue;
2. second means extending from said proximal end to said first means for providing access therebetween;
3. third means for releasably holding a portion of said insulated conductor in a manner to reduce interference with the operation of attaching said electrode to body tissue; and

4. fourth means disposed in communication with said third means and having a cam portion;

(B) auxiliary device means for insertion within said third means of said primary device and including first and second surfaces, said auxiliary device means being disposable from a first position to a second position within said third means of said primary device whereby said first surface is disposed to abut said electrode lead and to remove said electrode from said first means of said primary device and simultaneously therewith to dispose said second surface from a third position within said fourth means wherein said insulated conductor is disposed entirely within the dimensions of said primary device, against said cam portion to a fourth position whereby said second surface abuts and removes said portion of said insulated conductor from said third means of said primary device.

4,207,904

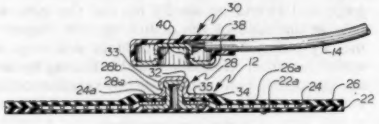
CONSTANT POWER DENSITY ELECTRODE ADAPTED TO BE USEFUL IN BIO-MEDICAL APPLICATIONS

Ronald W. Greene, 3116 S. 133rd St., Seattle, Wash. 98168

Continuation of Ser. No. 763,544, Jan. 28, 1977, abandoned. This application Sep. 25, 1978, Ser. No. 945,514

Int. Cl.[2] A61N *1/04*

U.S. Cl. 128—798 **3 Claims**



1. A reusable electrode which is particularly suitable for use in bio-medical applications on human beings, comprising:

a. a flexible, electrically conducting, relatively thin lower element, approximately 1/64th inch thick, having upper and bottom surfaces and a narrow peripheral lip on the upper surface thereof defining a recess area, wherein the bottom surface of said lower element is suitable for contact with the skin of human users and conformable to the contours of the human body;

b. an electrically conducting, relatively thin, approximately 50-mesh metal screen intermediate element, approximately 1/64th inch thick, embedded in the lower element in said recess area thereof so that said intermediate element is in intimate electrical contact with said lower element and is bounded by said peripheral lip, said metal screen being capable of compound deformation without distortion;

c. a flexible, electrically insulating, relatively thin, upper element overlaying said intermediate element and said peripheral lip of the lower element; and

d. terminal means located approximately central of said electrode and in direct electrical contact with said intermediate element, said terminal means being connectable, through a conducting lead, or the like, to a source of electrical energy;

wherein the combination of the mesh size and thickness of said metal screen and the thickness of said lower element is such that a substantially equal low resistance path exists between said terminal means and any other point on the bottom surface of said lower element, so that there is a substantially uniform power density over the bottom surface of said lower element, and wherein said metal screen is sufficiently rigid, due to its thickness and mesh size, that when the electrode is deformed from a rest configuration to a desired configuration, said electrode is prevented from recovering toward the rest configuration, so that the electrode remains in said desired configuration without restraint.

4,207,905

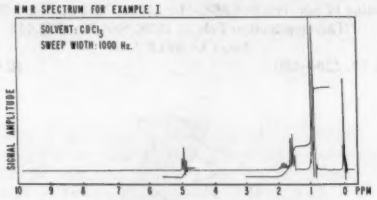
ISOBUTYL SUBSTITUTED HETEROCYCLIC COMPOUNDS FOR AUGMENTING OR ENHANCING THE ORGANOLEPTIC PROPERTIES OF SMOKING TOBACCOS AND SMOKING TOBACCO ARTICLES

Donald A. Withycombe, Lincroft; Braja D. Mookherjee, Holmdel; Manfred H. Vock, Locust, and Joaquin F. Vinals, Red Bank, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

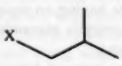
Division of Ser. No. 807,856, Jun. 16, 1977, Pat. No. 4,093,752. This application Mar. 17, 1978, Ser. No. 887,627

Int. Cl.[2] A24B *3/12*

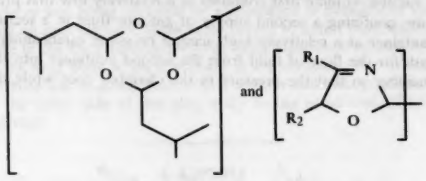
U.S. Cl. 131—17 R **2 Claims**



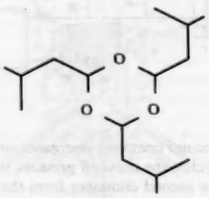
2. A smoking tobacco composition comprising smoking tobacco and intimately admixed therewith a composition useful in augmenting or enhancing the aroma or taste of said smoking tobacco consisting of (i) a smoking tobacco flavor augmenting or enhancing quantity of a mixture of isobutyl substituted heterocyclic compounds having the generic formula:



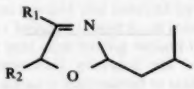
and wherein X is a moiety selected from the group consisting of:



and wherein R_1 and R_2 are different and each is selected from the group consisting of methyl and ethyl, comprising (a) 2,4,6-triisobutyl-1,3,5-trioxane having the formula:



and (b) a mixture of oxazoline compounds having the generic structure:



wherein R_1 and R_2 are different and each is selected from the group consisting of ethyl and methyl; and (ii) the remainder of said formulation being at least one adjuvant for said mixture being compatible with said mixture and said smoking tobacco and being selected from the group consisting of:

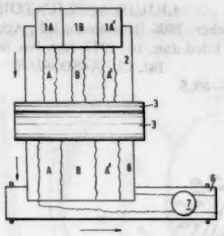
Beta-ethyl-cinnamaldehyde;
Eugenol;
Dipentene;
Damascenone;
Maltol;
Ethyl maltol;
Delta decalactone;
Benzaldehyde;
Amyl acetate;
Ethyl butyrate;
Ethyl valerate;
Ethyl acetate;
2-Hexenol-1;
2-Methyl-5-isopropyl-1,3-nonadiene-8-one;
2,6-Dimethyl-2,6-undecadiene-10-one;
2-Methyl-5-isopropyl acetophenone;
2-Hydroxy-2,5,5-8a-tetramethyl-1-(2-hydroxyethyl)-decahydronaphthalene;
Dodecahydro-3a,6,6-9a-tetramethyl naphtho(2,1b)-furan;
4-Hydroxy hexanoic acid, gamma lactone;
Polyisoprenoid hydrocarbons;
Celery seed oil;
Coffee extract;
Bergamot oil;
Cocoa extract;
Nutmeg oil; and
Origanum oil.

4,207,906

METHOD OF MAKING A CIGARETTE

Friedlieb Seehofer, Pinneberg, and Helmut Kalies, Bünningstedt, both of Fed. Rep. of Germany, assignors to B.A.T. Company Limited, Hamburg, Fed. Rep. of Germany

Filed Jan. 17, 1978, Ser. No. 870,240
Int. Cl.[2] A24C *5/39*
U.S. Cl. 131—21 D **12 Claims**



1. In a method of making a cigarette having a core of a first material and at least one wrapping of at least a second material surrounding said core, said wrapping and said core comprising different smoking materials, the improvement which comprises

applying to a moving base a first stream of said first material and at least one pair of second streams of said second material, one second stream on either side of said first stream,

said moving base depositing said first and second streams onto a support moving at an substantially a right angle to said base such that a line through said first stream and said second streams is substantially parallel to the direction of movement of said support,

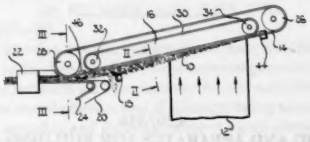
whereby one stream of said second material is deposited upstream of said first material which, in turn, is deposited upstream of the other stream of said second material, thereby forming a composite layer comprising a top layer, a bottom layer and a core layer therebetween, said composite layer being adapted to be formed into a tobacco cord.

4,207,907

CIGARETTE MAKING MACHINE

Derek H. Dyett, London, England, assignor to Molins, Ltd., London, England

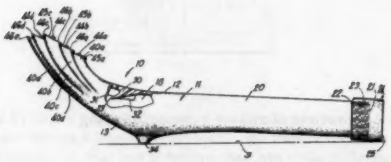
Filed Jul. 3, 1978, Ser. No. 921,228
Claims priority, application United Kingdom, Jul. 8, 1977, 28687/77
Int. Cl.[2] A24C *5/18*
U.S. Cl. 131—84 B **11 Claims**



1. A cigarette making machine including a first air-previous band, means for forming on the band a cigarette filler stream, means for applying suction through the band whereby the filler stream is held on the band and is thereby carried to a continuous wrapper web in which the filler stream is enclosed to form a cigarette rod, a second air-previous band, and means for mounting the second band within the first band, whereby the second band contacts and supports the first band at least along part of the run of the first band along which the filler stream is carried by the first band.

4,207,908
Patent Not Issued For This Number

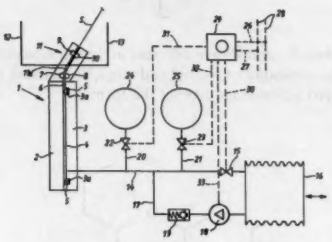
4,207,909
LIQUID APPLICATOR
Gene E. Wilcher, 2806 Browntown Rd., Atlanta, Ga. 30369
Filed Jun. 10, 1977, Ser. No. 805,518
Int. Cl.[2] A45D *40/30*
U.S. Cl. 132—88.5 **5 Claims**



1. An applicator for applying liquid to the scalp of a person comprising, a hollow body for receiving and retaining said liquid, a rigid hollow generally cylindrical shank integrally joined to and protruding rearwardly from the proximal end of said body, said shank forming a handle by which the applicator is held, the hollow interior of said shank communicating with the hollow interior of said body for forming therewith a common reservoir for said liquid, a removable cap on the end of said shank, a plurality of substantially rigid hollow juxtaposed individual tubular fingers extending forwardly from the distal end of said body, said fingers being arcuate and curved forwardly and downwardly and provided with space forwardly tapering and pointed tips disposed in a transverse arc, the hollow interior of said fingers communicating with the hollow interior of said body, the end portions of said fingers being generally flat, and applicator roller means substantially smaller than said end portions and respectively rotatably carried by and in the flat end portions of said fingers inwardly of said tips for applying said liquid from the interior of said fingers to the scalp of a person after said tips have parted the hair adjacent to the scalp.

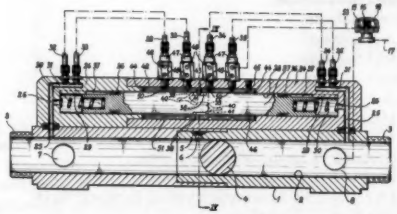
4,207,910
METHOD AND APPARATUS FOR BUILDING UP AND REDUCING THE PRESSURE OF GASES IN IONOGRAPHY IMAGING CHAMBERS
Jügen Müller, Munich, Fed. Rep. of Germany, assignor to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany
Filed Jul. 26, 1978, Ser. No. 928,061
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734323
Int. Cl.[2] G03B *41/16*
U.S. Cl. 137—14 **13 Claims**

1. A method of admitting a gaseous fluid into the interior of a chamber, particularly of admitting a high Z gas into the interelectrode gap of an ionography imaging chamber, comprising the steps of confining a first supply of gaseous fluid in a variable-volume first container at a relatively low first pressure; confining a second supply of gaseous fluid in a second container at a relatively high second pressure; establishing a path for the flow of fluid from the second container into the chamber so that the pressure in the chamber rises while the



pressure in the second container decreases until the pressure in the chamber matches the reduced pressure in the second container; sealing the second container from the chamber; pumping the fluid from the first container into the chamber so that the pressure in the chamber rises above said second pressure; and reducing the volume of the first container in the course of said pumping step so that the pressure in the first container continues to match or at least approximates said first pressure.

4,207,911
OPERATING STATION FOR A DUCT SYSTEM THROUGH WHICH A PLUG BODY IS PUMPED
Henry M. T. van Haaften, Aquamarijnstraat 793, Groningen, Netherlands
Filed Sep. 26, 1978, Ser. No. 945,822
Int. Cl.[2] A01G *27/00*
U.S. Cl. 137—119 **7 Claims**



1. An operating station for a duct system comprising means to pump a fluid through a duct and a plug body within said duct, adapted to move with a sliding fit through the duct by the fluid, means in the operating station to withhold the plug body therein temporarily and means to cause the plug body to leave this station and continue its movement with the fluid in the

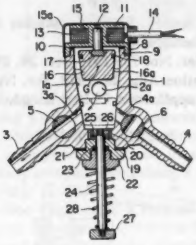
duct, characterized in that the operating station has actuating means to be operated by the fluid in the duct depending on the position of the plug body, said actuating means having two surfaces and being movable by a difference in pressure of the fluid on said surfaces, there being means to admit fluid from a zone in the duct guiding the plug body positioned to one side of the plug body when stationary in the station to one of said surfaces and to admit fluid from a zone in said duct positioned to the other side of the plug body to the other one of said surfaces.

4,207,912

EMERGENCY SHUT-OFF VALVE

Kiyotada Ichikawa, 5-chome, 21 Edogawa, Edogawa-ku, Tokyo 132, Japan

Filed Jul. 3, 1978, Ser. No. 921,704
Int. Cl.[2] F16K *17/36*
U.S. Cl. 137—39 **5 Claims**



1. An emergency shut-off valve comprising a hollow body which is open at its top end and covered by a cover member, said cover member having secured to its inside central portion an iron core, said iron core having wound therearound a coil connected to a separately provided gas leak detector from which an electric signal is transmitted to said coil to magnetize said iron core, said hollow body having provided therein an actuator having secured to its top face a permanent magnet which is so arranged that its upper side has the same polarity as that which appears at the underside of said iron core when it is magnetized and whereby said actuator is magnetically attached to the underside of said iron core so that said actuator is able to fall down, said hollow body also having formed in its side wall a gas supply hole and at least one gas discharge hole which is closed by said actuator when it drops, and, a push-up lever provided at the bottom of the hollow body, said push-up lever being adapted to raise up the actuator from its dropped position to its uppermost position where it is magnetically attached to the iron core.

4,207,913

LOW BURST PRESSURE CORROSION RESISTANT RUPTURE DISC ASSEMBLY

Lester L. Fike, Jr., Blue Springs, Mo., assignor to Fike Metal Products Corporation, Blue Springs, Mich.

Filed Jan. 23, 1978, Ser. No. 871,204
Int. Cl.[2] F16K *17/40*
U.S. Cl. 137—68 R **7 Claims**

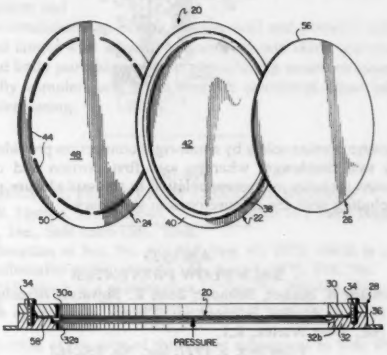
1. A non-fragmenting, low burst pressure rupture device assembly for mounting between opposed, releasably interconnected flange members presenting a pressure relief orifice for a confined area under pressure, said assembly comprising:

a relatively thin, flexible, fluid impervious sealing element adapted to be mounted between said flange members across said orifice in fluid release blocking relationship to said confined area;

a support member for the element configured to be mounted between said flange members in supporting relationship to the element downstream of the confined area,

said support member being provided with relieved areas defining a section which gives way and opens up when the fluid pressure, as sensed by the section by virtue of translation of the fluid pressure to the section through the sealing element bearing thereagainst reaches a pre-determined level only slightly greater than an acceptable operating pressure within said confined area,

said element having an integral, peripherally extending deflected part presenting a bulge joining the portion thereof engaging said section of the member with the remainder of the element and extending substantially around the perimeter of said section which allows said portion of the



element to freely move with said section during any shifting thereof that may occur upon sensing of pressurization of the area or of fluctuations of pressure therein below said pre-determined level thus assuring that opening of the section by a rise of pressure in said area is substantially independent of and essentially unaffected by the inherent burst pressure characteristics of the sealing element; and

plate means secured to the sealing element on the face thereof opposed to said support member and operable to effect full opening of the sealing element upon rupture of said section at least to the extent of the aperture presented by opening of said section.

4,207,914

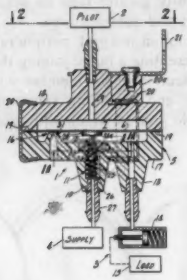
FLUID RELAY APPARATUS

Thomas M. Holloway, Mukwonago; George J. Janu, Brookfield; Richard N. Laakaniemi, Milwaukee, and Warren A. Lederman, Wauwatosa, all of Wis., assignors to Johnson Controls, Inc., Milwaukee, Wis.

Continuation of Ser. No. 763,863, Jan. 31, 1977, abandoned. This application Nov. 27, 1978, Ser. No. 964,068
Int. Cl.[2] G05D *16/00*; F15B *5/00*
U.S. Cl. 137—85 **15 Claims**

1. A fluid relay device, comprising a body assembly, a control flexible diaphragm of a flexible material permitting relative movement between various portions thereof with flexing of the diaphragm therebetween, said diaphragm being secured within the body assembly and defining an input signal chamber to one side of the diaphragm and a combined exhaust and output chamber to the opposite side of the diaphragm, said diaphragm moving to a position to balance the pressure in said chambers, a valved supply means connected to said output chamber and having an essentially rigid control means coupled to a first portion of diaphragm and moving with the diaphragm for opening and closing of said supply means in response to movement of said diaphragm, and an exhaust port means connected to said output chamber in spaced relation to the supply means including said rigid control means and having a seal means located in opposed relation to a closure portion of the dia-

phragm and opened and closed by the movement of said diaphragm, and said rigid control means and said first portion being spaced from said closure portion and connected to said



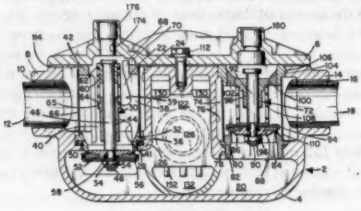
closure portion solely by a non-rigid connection provided only by said diaphragm whereby said first portion and control means includes movement relative to the said closure portion including with the closure portion stationary.

4,207,915

BACK FLOW PREVENTER

Bernard B. Becker, Belmont; John K. Bowman, Brighton, and Cyril A. Randall, Belmont, all of Mass., assignors to Amtrol, Inc., West Warick, R.I.

Filed Sep. 6, 1977, Ser. No. 830,463
Int. Cl.[2] E03C *1/10*
U.S. Cl. 137—117 **10 Claims**



1. A back flow preventer valve comprising a single unitary horizontal body, a one piece removable cover, a one piece gasket for making a watertight seal between said body and cover, horizontally aligned entrance and exit, a tortuous passage connecting said entrance and exit, the portions of said passage adjacent said entrance and exit being vertical and spaced from each other to provide an intermediate portion of said passage, first and second vertical check valve units removably positioned in the vertical portions of said passage, the said first unit having a first strainer on the upstream side of the valve in said first unit, said first strainer being maintained against removal from said first unit by said cover, the said second unit having a second strainer on the downstream side of the valve in said second unit, said second strainer being maintained against removal from said second unit by said cover,

a bypass leading from said intermediate portion to an opening to atmosphere through said body,

a relief valve for closing or opening said bypass,

said gasket having as an integral part thereof of a diaphragm attached to said relief valve,

an opening through said gasket above said first check valve unit large enough to permit the removal of said first unit when said cover has been removed from said body without disturbing said gasket,

a passage in said cover running from a position above said first unit to a position above said diaphragm whereby upstream pressure can be applied to the upper side of said diaphragm,

the under side of said diaphragm being subject to the pressure in said intermediate portion,

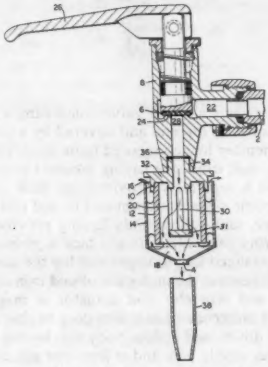
the aforesaid construction being such that when the upstream pressure on said diaphragm is in excess of a predetermined differential above the intermediate portion pressure, said relief valve will be closed to prevent flow to said opening and when the pressure differential between said upstream pressure and said intermediate portion pressure is reduced below a predetermined amount, said diaphragm will move said relief valve to open said bypass to permit flow from said intermediate portion to said opening through said body.

4,207,916

TAP

Cecil Hayes, East Sussex, England, assignor to W. M. Still & Sons Limited, Hastings, England

Continuation of Ser. No. 755,191, Dec. 29, 1976, abandoned.
This application Aug. 28, 1978, Ser. No. 937,541
Claims priority, application United Kingdom, Jan. 13, 1976, 1245/76
Int. Cl.[2] F16T *1/45*
U.S. Cl. 137—171 **15 Claims**



1. A tap structure for controlling the discharge of a liquid that will partially vaporize upon discharge, said tap structure comprising

a valve body structured to define an inlet duct and an outlet duct for said liquid,

a valve member carried in said valve body, said valve member being movable between open and close positions between said inlet and outlet ducts for controlling flow of said liquid from said inlet duct to said outlet duct, and

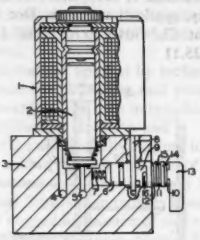
expansion chamber structure connected to said outlet duct, said expansion chamber including a deflector interiorly thereof, said liquid being receivable against said deflector in said expansion chamber from said outlet duct, said liquid partially vaporizing in said expansion chamber prior to discharge therefrom, and said expansion chamber structure defining a first outlet structure positioned to discharge that portion of said liquid in a liquid state and a second outlet structure positioned relative to said first outlet duct structure to discharge that portion of said liquid in a vapor state, said first and second outlet structures cooperating to lessen the pressure of that liquid state portion discharged from said first outlet structure by permitting the vapor state portion to discharge through said second outlet structure.

4,207,917

HAND-OPERATION DEVICE FOR SOLENOID VALVES

Detlef Opel, Haste, and Rudolf Möller, Hanover, both of Fed. Rep. of Germany, assignors to WABCO Westinghouse GmbH, Hanover, Fed. Rep. of Germany

Filed Sep. 27, 1978, Ser. No. 946,249
Int. Cl.[2] F16K *35/00, 31/06*
U.S. Cl. 137—269 **9 Claims**



1. An auxiliary actuator for an electromagnetic control valve device having a valve member associated with the armature thereof via which fluid pressure communication is controlled between passageways formed in said control valve device, said auxiliary actuator comprising a manually operable actuating pin having:

(a) a shank portion disposed in a bore of said control valve device for axial movement between a deactuated position and an actuated position of said actuating pin, said shank portion constituting one end of said actuating pin for engagement with said armature in said actuated position to thereby effect operation of said valve member; and

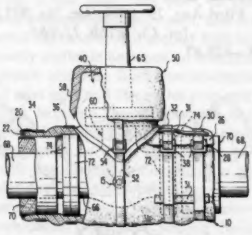
(b) an actuating portion at the other end of said actuating pin havjng an inner, an outer and an intermediate segment, adjacent ones of said segments, and said inner segment and said shank portion being defined by an annular groove therebetween, whereat respective ones of said segments are removable to condition said actuating portion for movement of said actuating pin to said actuated position by a selectable one of a plurality of operating modes.

4,207,918

INSULATION JACKET

David Burns, Williamsville, and James R. Spicer, Tonawanda, both of N.Y., assignors to Insulation Distributors, Incorporated, Buffalo, N.Y.

Filed Apr. 17, 1979, Ser. No. 30,882
Int. Cl.[2] F16L *59/16*
U.S. Cl. 137—375 **11 Claims**



1. A three-piece thermal insulation jacket for use as a valve cover, said jacket comprising:

(a) a body portion comprising a central section and two lateral sections each lateral section including an inboard and outboard belt, each lateral section having two ends and a flap at each end, the flaps at each end of the jacket being separated by a U-shaped cutout at each end of said central section, each of said belts extending along each of said lateral sections, the ends of each of said belts being adapted to interlock with each other said body portion adapted to be disposed around a horizontal section of a valve casing, said U-shaped cutouts adapted to be disposed around an upstanding section of said valve casing, whereby said body portion may be securely fastened around said valve casing;

(b) a skirt section, comprising two parabolic sections adapted to cooperate with each of said U-shaped cutouts whereby said skirt is adapted to surround said upstanding section; and

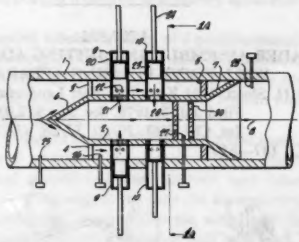
(c) an insulation cap having a upper wall and a lateral wall, said lateral wall adapted to surround said skirt, whereby said body portion, said skirt and said cap assure an essentially complete seal when they are positioned about said valve casing.

4,207,919

DIGITAL FLUID FLOW CONTROL SYSTEM

Roger S. Hutton, Minneapolis, Minn., assignor to Powell Industries, Inc., Salt Lake City, Utah

Continuation of Ser. No. 614,843, Sep. 19, 1975, which is a continuation of Ser. No. 64,142, Aug. 3, 1970, Pat. No. 3,937,248, which is a continuation of Ser. No. 703,468, Feb. 6, 1968, abandoned. This application Sep. 14, 1978, Ser. No. 942,327
The portion of the term of this patent subsequent to Feb. 10, 1993, has been disclaimed.
Int. Cl.[2] G05D *7/03*
U.S. Cl. 137—487.5 **1 Claim**



1. An automatic fluid flow control system comprising:

an upstream conduit;

a downstream conduit;

a plurality of individually actuatable digital valve elements interconnecting the upstream conduit and the downstream conduit, each valve element having a flow determining orifice, a plug, and means responsive to a binary signal for controlling the movement of the plug so it assumes one of only two stable positions corresponding to the values of the binary signal, the plug closing the orifice in the one stable position and lying outside the fluid stream in the other stable position;

means for generating a signal representative of the dynamic fluid conditions of the system;

means for producing a plurality of binary signals for application to the valve elements, the binary signals representing the valve states required to make the dynamic fluid conditions satisfy a predetermined criterion;

means for coupling to the binary signal producing means the signal representative of the dynamic fluid conditions; and

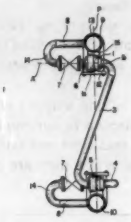
means for coupling the binary signals to the respective valve elements to place their plugs in the positions corresponding to the values of the binary signals.

4,207,920

SWIVEL ASSEMBLY FOR INTERCONNECTING TWO RELATIVELY MOVABLE CONDUITS

Heinz Westerhoff, Jakobstr. 36, Mühlheim an der Ruhr, Fed. Rep. of Germany (4330)

Filed Feb. 16, 1978, Ser. No. 878,435
Int. Cl.[2] F16L *3/12, 3/00*
U.S. Cl. 137—615 **10 Claims**



1. An assembly for interconnecting two relatively longitudinally movable conduits, said assembly comprising:

at least two swivel fittings each having a pair of relatively swivelable sides;

two respective inner pipes each having one end rigidly connected to one side of the respective fitting, said inner pipes having means swivelably interconnecting other ends of said inner pipes to each other;

respective outer pipes rigidly connected between said conduits and further connected to said other sides of said fittings; and

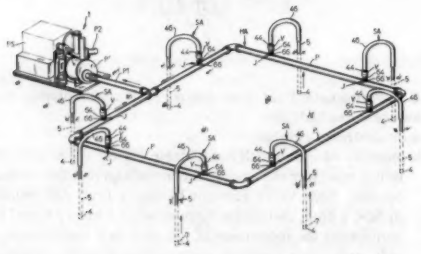
means fixing said other sides immovably on the respective conduits for eliminating torsional strain in the respective outer pipes.

4,207,921

HEADER ASSEMBLY AND JETTING ADAPTER FOR WELL POINT PUMPING APPARATUS

Albert H. Sloan, 4201 Kean Rd., Fort Lauderdale, Fla. 33314

Filed Jul. 5, 1978, Ser. No. 922,039
Int. Cl.[2] F16L *29/00, 37/28, 41/04*
U.S. Cl. 137—616 **4 Claims**



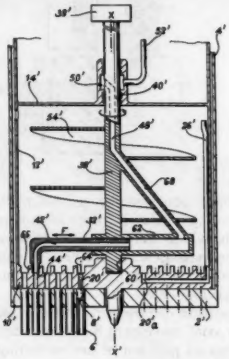
1. A header assembly for well point pumping apparatus including a header pipe disposed over the ground to be dewatered, said header pipe having at least one hole therein, having an axis extending generally upwardly relative to said round, at least one vertically extending well point riser in the ground and having an upper end extending from said ground, said upper end including means for connection with said hole, said upper end connection means including at least one swing arm conduit connected at one end to said hole, said swing arm conduit being swingable about the axis of said hole, and being connected at its other end to said upper end of said well point riser said one end being a plain pipe end and having a flexible sleeve mounted over said end, said pipe end and said sleeve being firmly insertable in said hole and forming a sealing connection with said header pipe, whereby said swing arm end can be inserted in and removed from said hole in said header pipe.

4,207,922

LIQUID SAMPLING APPARATUS

Claude Andrieux, Orsay, and Pierre Renaud, Gif-sur-Yvette, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 9, 1977, Ser. No. 858,946
Claims priority, application France, Dec. 9, 1976, 76 37090
Int. Cl.[2] G01N *1/10*; G21C *17/06*
U.S. Cl. 137—625.11 **5 Claims**



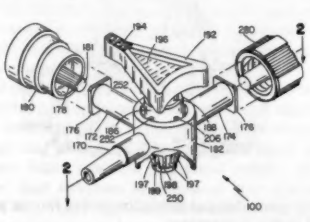
1. An apparatus for sampling a liquid in a plurality of tubes wherein it comprises a cylindrical enclosure with a vertical axis and circular cross-section having a given length l, said enclosure having a lower planar wall, a side wall and a cover which scales the upper part of the enclosure, the lower planar wall being perforated by a plurality of orifices whose number is at least equal to the number of tubes, the end of each tube issuing into one of the orifices, the orifices being regularly disposed on a spiral marked on the lower planar wall, and a movable sampling member comprising a single suction tube having a free end associated with means for simultaneously rotating the suction tube about the axis of the enclosure and translating the tube in such a way that its free end remains in contact with the wall provided with orifices and moves along the curve.

4,207,923

FLUID VALVE

Joel F. Giurtino, Littleton, Colo., assignor to Cobe Laboratories, Inc., Lakewood, Colo.

Filed Aug. 29, 1978, Ser. No. 937,851
Int. Cl.[2] F16K *11/085*
U.S. Cl. 137—625.47 **8 Claims**



1. In a stopcock valve including a plastic valve body with internal passages leading from external fittings to ports on an internal bore and including a plastic valve core received in said

bore and having at least one radially-directed internal passage for connecting said ports, the improvement wherein

said bore and a portion of said core are cylindrical, the external diameter of said core is larger than the internal diameter of said bore to achieve an interference fit, the cylindrical surfaces of said bore and core are sufficiently close to a perfect cylinder in shape to maintain an interference fit all around said cylindrical surfaces so as to prevent leakage from said ports,

a plurality of fingers extend from said body, said fingers are angled radially inward toward the longitudinal axis of said bore and are capable of resilient radial motion with respect to said axis,

said valve core includes a lip, said lip including

a tapered surface for deflecting said plurality of fingers radially outward as said core in installed by translation in a first longitudinal direction and

a retention surface substantially normal to said longitudinal axis for acting against the tips of said fingers to permanently lock said core into said body longitudinally once said fingers snap radially inward past said lip,

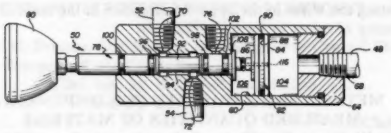
said substantially normal inclination of said retention surface and said radially-inward angle of said fingers acting to prevent radial separation of said fingers under an axial force applied to said core in a second axial direction, opposite said first direction, thereby preventing said core from being removed from said body along said section direction.

4,207,924

CONTROL VALVE FOR FLUID ACTUATOR

Clifford M. Peters, Longview, Tex., assignor to W-K-M Wellhead Systems, Inc., Shreveport, La.

Filed Nov. 13, 1978, Ser. No. 959,812
Int. Cl.[2] F15B *13/042*; F16K *31/122*
U.S. Cl. 137—625.66 **6 Claims**



1. A control valve comprising:

a valve body, an elongated bore within said body including an enlarged diameter fore portion defining a piston chamber, an elongated valve member slidably mounted within the bore having a knob on an outer end thereof and a piston on an inner end thereof within the piston chamber, said piston having an inner face adjacent said knob and an outer face remote from said knob;

said body having a first fluid inlet port, an outlet port, a bleed port, and a second fluid inlet port; said piston having one face thereof exposed to said second fluid inlet port and being selectively shiftable between an unseated first position of the piston allowing fluid communication between the first fluid inlet port and the outlet port and precluding communication between the outlet port and the bleed port, and a seated second position of the piston allowing fluid communication between said outlet port and said bleed port and precluding communication between said first fluid inlet port and said outlet port;

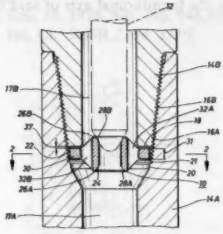
said piston chamber including a pressure chamber portion in fluid communication with said second fluid inlet port adjacent said one face of the piston and a fluid storage chamber portion adjacent the other face of the piston, and a one-way check valve carried by the valve member permitting fluid flow from the pressure chamber portion to the storage chamber portion for equalizing the pressure therebetween in the unseated first position of the piston, said storage chamber when said pressure chamber portion is pressurized from said second fluid inlet port being pressurized through said one-way check valve whereby upon the exhausting of fluid from the pressure chamber portion the pressurized fluid in said storage chamber portion quickly moves said piston to said seated second position.

4,207,925

REVERSIBLE BAFFLE PLATE

Paul M. Nelson, Houston, Tex., assignor to Wilson Industries, Inc., Houston, Tex.

Filed Nov. 7, 1977, Ser. No. 849,250
Int. Cl.[2] F15D *1/02*
U.S. Cl. 138—44 **1 Claim**



1. A baffle landing plate adapted for reversible disposition within an annular recess of a predetermined axial dimension defined between adjacent sections of drill pipe and adapted for receiving and supporting a bottom hole survey apparatus comprising:

an inner elongated tubular member of a predetermined axial dimension having first and second axial ends thereon, each axial end being sized and shaped to define landing surfaces to receive the lowermost axial end of a bottom hole survey apparatus therein;

an outer ring disposed concentrically about said inner tubular member at a location thereon substantially equidistant said first and second axial ends thereof, said outer ring having an axial dimension less than the dimension of said tubular member and being receivable within the annular recess between adjacent sections of drill pipe; and,

a plurality of webs disposed between said inner tubular member and said outer ring for supporting said members in said concentrically spaced relationship, said webs cooperating with said inner tubular member and said outer ring to define a plurality of flow passages therebetween.

4,207,926

LOOM PROJECTILE

Victor F. Sepavich, West Boylston, Mass., assignor to Crompton & Knowles Corporation, New York, N.Y.

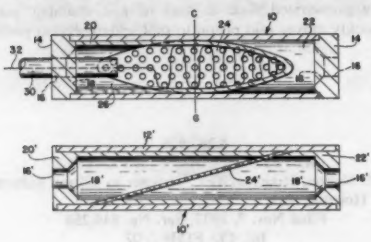
Filed Mar. 12, 1979, Ser. No. 19,696
Int. Cl.[2] D03J *5/06*
U.S. Cl. 139—196.3 **6 Claims**

1. A projectile for use in a loom in which filling picks are inserted into a warp shed from an outside supply source, comprising:

(a) an elongated body having an inlet opening at one of its ends and an outlet opening at the opposite end thereof;

(b) an elongated cavity within said body extending along a longitudinal axis;

(c) a perforated partition located within said cavity, which divides said cavity into two filling storage chambers and



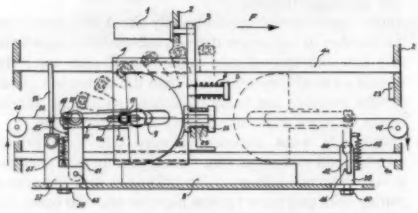
extends across said cavity at an angle of less than 90 degrees from the longitudinal axis of said cavity.

4,207,927

BRAIDING DEVICE FOR COIL WINDING MACHINES

Giuseppe Camardella, Saronno,, Italy, assignor to Tekma Kinomat S.p.A., Caronno Pertusella, Italy

Filed Jun. 6, 1978, Ser. No. 913,077
Claims priority, application Italy, Jun. 9, 1977, 24518 A/77
Int. Cl.[2] B21F *3/00, 7/00*
U.S. Cl. 140—102 **15 Claims**



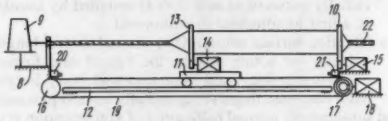
1. In a braiding device for intermittently forming a wire braid from a single wire fed without interruption, of the type in which seizing means seize the wire at an intermediate point along its length and makes a movement such as to form a double wire loop, which is juxtaposed with a straight portion of the wire to then undergo twisting; the improvement comprising a straight guide that extends parallel to the wire, a circular sector that rolls back and forth along said straight guide, an arm rigid with said circular sector and projecting from said circular sector along the median axis of symmetry of said circular sector, seizing means for said wire carried at the end of the arm opposite said circular sector, and means for rolling said sector back and forth along said straight guide to move said seizing means in a cycloidal trajectory that retraces its own path in opposite directions as said circular sector rolls back and forth on said straight guide to thereby form said double wire loop.

4,207,928

PROCESS FOR MANUFACTURING TWISTED WIRE ARTICLES WITH VARIABLE DIRECTION OF TWIST AND A MACHINE FOR ACCOMPLISHING SAME

Gennady D. Pershin, ulitsa Vokzalnaya, 144/2, kv. 2; Klim G. Zalyaljutdinov, ulitsa Moskovskaya, 16, kv. 68; Rais F. Gimazetdinov, ulitsa Shishko, 4, kv. 54; Vladimir D. Egorov, ulitsa Gryaznova, 14/1, kv. 85, and Gennady K. Schegolev, prospekt K. Marxa, 136, kv. 23, all of Magnitogorsk Chelyabinskoi oblasti, U.S.S.R.

Filed Sep. 26, 1978, Ser. No. 946,036
Claims priority, application U.S.S.R., Dec. 16, 1977, 2551251
Int. Cl.[2] B21F *7/00*
U.S. Cl. 140—115 **5 Claims**



1. A process for manufacturing twisted wire articles with variable direction of twist comprising: continuously feeding wires to series-arranged zones of preliminary and final twisting; twisting said wires with a rotating twisting head in one of preset directions in the zone of preliminary twisting while translating the twisting head to obtain an essentially uniform pitch of twist thereby ensuring the maximum number of lays in said zone, while simultaneously twisting the wires in the opposite direction in the zone of final twisting of wires to form an article; and subsequently untwisting the pre-twisted wires in the zone of preliminary twisting by rotating the twisting head in a direction opposite the first direction of rotation while simultaneously translating the twisting head in a direction opposite the first direction of translation and simultaneously twisting the wires in the opposite direction in the zone of final twisting of wires to form an article.

4,207,929

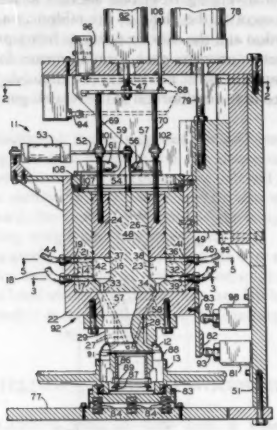
METHOD AND APPARATUS FOR DISPENSING MEASURED QUANTITIES OF MATERIAL

Larry W. Stoner, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Sep. 28, 1978, Ser. No. 946,553
Int. Cl.[2] B65B *3/12, 3/32*
U.S. Cl. 141—1 **6 Claims**

1. A method of forcing predetermined amounts of a bearing lubricant into at least one bearing lubricant reservoir from apparatus comprising at least one axially extending dispensing chamber having port means selectively connectable with a discharge nozzle and a lubricant supply source and having plunger means axially movable along a line of movement therein for forcing quantities of lubricant therefrom, the apparatus further comprising a valve means relatively rotatable with respect to the at least one dispensing chamber about a predetermined axis generally parallel with the line of movement of the plunger means; the method comprising: flowing lubricant into the at least one dispensing chamber while it is in open material transferring communication with a lubricant source, until a quantity of the lubricant material fills a cavity defined by the at least one dispensing chamber and the plunger means with the plunger means located in a first axial position relative to the at least one dispensing chamber; effecting relative rotary movement, about the predetermined axis, of the valve means with respect to the at least one dispensing chamber and thereby blocking further flow of lubricant into the at least one dispensing chamber and establishing an open discharge path from the at least one dispensing chamber to the lubricant reservoir without moving the plunger means relative to the dispensing chamber; reducing the volume of the cavity

and forcing lubricant along the open discharge path and into the lubricant reservoir; closing the discharge path without moving the plunger means relative to the dispensing chamber; re-establishing open material transferring communication between the at least one dispensing chamber and lubricant source



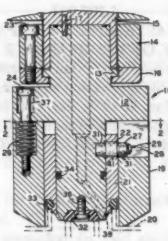
by once again effecting relative rotary movement, about the predetermined axis, of the valve means with respect to the at least one dispensing chamber, and flowing lubricant into the at least one dispensing chamber while increasing the volume of the cavity.

4,207,930

METHODS AND APPARATUS FOR USE IN DISPENSING DYNAMOELECTRIC MACHINE LUBRICANT MATERIAL

James M. Tomson, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Sep. 28, 1978, Ser. No. 946,568
Int. Cl.[2] B65B *3/04, 3/10*
U.S. Cl. 141—1 **8 Claims**



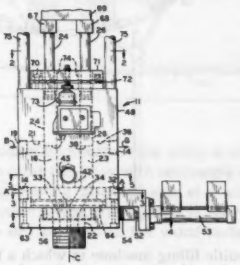
1. A method of controlling the flow of extrudable lubricant material moving from a material dispensing head and into a lubricant reservoir of a dynamoelectric machine end shield while using nozzle means axially movable toward and away from a dynamoelectric machine end shield wherein the nozzle means includes a nozzle body having at least one material discharge path and also includes closure means; the method comprising: holding the closure means in passage blocking relationship with the at least one material discharge path while axially moving the nozzle means toward a dynamoelectric machine end frame; engaging the dynamoelectric machine end frame with at least a portion of the nozzle means and thereupon effecting concurrent relative axial movement of the nozzle body with respect to the end frame and relative rotary movement between the closure means and nozzle body, and exposing the at least one discharge opening to the end frame; expelling lubricant material from the discharge path into the end frame along a flow path; and thereafter concurrently moving the nozzle means axially away from the dynamoelectric machine end frame while effecting relative rotary movement between the closure means and the nozzle body, and thereby again blocking the discharge path by shearing material being expelled from the discharge path by moving the closure means transversely across the flow path of the lubricant material.

4,207,931

METHODS AND APPARATUS FOR DISPENSING DYNAMOELECTRIC MACHINE LUBRICANT MATERIAL

James M. Tomson, Fort Wayne, and Richard C. Bohde, New Haven, both of Ind., assignors to General Electric Company, Fort Wayne, Ind.

Filed Sep. 28, 1978, Ser. No. 946,569
Int. Cl.[2] B65B *3/04, 3/10*
U.S. Cl. 141—1 **12 Claims**



1. A method of metering predetermined quantities of a bearing lubricant material into at least one bearing lubricant reservoir from at least one dispensing chamber that is of an elongate configuration and that has axially movable plunger means therein for forcing quantities of the lubricant material therefrom; the method comprising:

moving lubricant material into the at least one dispensing chamber through a passageway that is in open material receiving relationship with a source of lubricant material and the at least one dispensing chamber and moving the material through a given port into the at least one dispensing chamber until a quantity of the lubricant material fills a cavity defined by the at least one dispensing chamber and the plunger means with the plunger means in a first axial position relative to the at least one dispensing chamber; changing the open material receiving relationship of the at least one dispensing chamber and the source of material to a closed relationship and thereby interrupting the flow of lubricant material through the given port into the at least one dispensing chamber while the plunger means is maintained in a fixed axial position relative to the at least one dispensing chamber, and establishing an open discharge path for lubricant material through the same given port from the cavity to the at least one bearing lubricant reservoir; relatively moving the plunger means axially with respect to the at least one dispensing chamber so as to reduce the volume of the cavity and thereby force lubricant material out of the same given port and along the open discharge path and into the lubricant reservoir; arresting relative axial movement of the plunger means and at least one dispensing chamber, and closing the discharge path for lubricant material out of the same given port and from the at least one dispensing chamber while such relative axial movement remains arrested; thereafter re-establishing the open material receiving relationship of

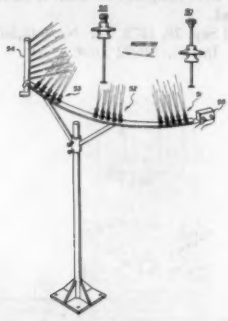
the at least one dispensing chamber through the same given port and with the source of material; and moving lubricant material through the same given port and into the at least one dispensing chamber, and relatively moving the plunger means axially with respect to the at least one dispensing chamber so as to increase the volume of the cavity.

4,207,932

AUTOMATIC FILLER TUBE AND BELL FLUSHING

Alfred J. Gilmour, 310 Hawthorne St., Waterloo, Ontario, Canada

Filed Jul. 18, 1978, Ser. No. 925,953
Claims priority, application Canada, May 25, 1978, 304068
Int. Cl.[2] B65B *3/04*; B08B *3/02*
U.S. Cl. 141—90 **7 Claims**



1. In a bottle filling machine in which a bottle is supported on a platform which is raised to encircle a filler tube and to sealingly engage a filler bell slidable on said filler tube, said platform having a bottle guide with an arcuate guide surface of radius substantially equal to the radius of the bottle and said platform, bell and filler tube travel past a spray stand having a plurality of spray nozzles, means being provided to detect the absence of a bottle on the platform and activate the spray nozzles, said nozzles being arranged to spray high pressure cleaning liquid upwardly against the bell, the improvement in which said bell has an integral outwardly extending flange with a radius greater than the radius of the guide surface whereby said bell is prevented from falling to the lower end of the filler tube by engagement of said flange with said guide the lower surface of said flange being hit by said liquid which causes the bell to slide up the filler tube to allow the cleaning liquid to enter the lower end of the bell, said flange having upper and lower surfaces which slope slightly downwardly, said bell having an outer wall surface extending downwardly from the top of the bell and facing outwardly at the lower end of the bell, said flange being approximately midway between the top and bottom of the bell and having upper and lower surfaces which unite with said outer wall surface via smooth transitional curves.

4,207,933

BOTTLE CONTENTS TRANSFER DEVICE

Edward H. Howson, Watertown, S. Dak., assignor to D & D Electric, Inc., Watertown, S. Dak., a part interest

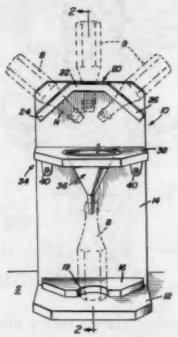
Filed Nov. 19, 1976, Ser. No. 743,409
Int. Cl.[2] B65B *3/06*
U.S. Cl. 141—106 **2 Claims**

1. A container contents transfer device, comprising, in combination:

(a) a planar base arranged for resting on a support surface;

(b) container retaining means arranged vertically above the base for supporting a container to be drained; and

(c) support means connected to the base and to the retaining means for mounting the retaining means above the base, the container retaining means including a substantially planar midportion arranged substantially parallel to the base, and a pair of outside planar portions extending toward the base in opposite directions from the midportion and diverging from one another at an acute angle with respect to the plane of the midportion, each of the midportion and the outside portions being provided with a respective aperture each forming means for retainingly receiving a neck of a bottle to be drained, the aperture provided in the midportion of the retaining means being in



the direction toward the support means from the apertures provided in the outside portions of the retaining means in order to prevent interference between drainage from bottles disposed in the apertures of the various portions; and

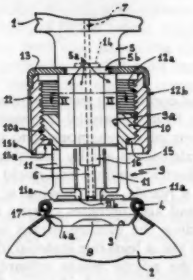
(d) shelf means mounted on the support means spaced from and disposed between the retaining means and the base for receiving a funnel, the shelf means including a substantially planar member extending cantilever fashion from the support means substantially parallel to the base and provided with a hole disposed for receiving the funnel.

4,207,934

SYSTEM OF FASTENING AN APPARATUS ON A CARTRIDGE OF FLUID UNDER PRESSURE

Gerard Scremin, Lyons, and Nino Urbano, Oullins, both of France, assignors to Application des Gaz, Paris, France

Filed Jan. 9, 1978, Ser. No. 868,102
Claims priority, application France, Jan. 10, 1977, 77 00956
Int. Cl.[2] B65B *3/04, 31/00*
U.S. Cl. 141—383 **11 Claims**



1. A coupling system for fastening and coupling an apparatus on a cartridge of fluid under pressure, said cartridge having a

central valve and having an annular bead surrounding said valve, said coupling system comprising:

a central core member carrying axially disposed fluid connecting means operative for fluid-tight coupling with the valve of said cartridge;

a tubular sleeve member having a first portion surrounding said core member and being non-rotatively but axially slidably supported thereon, the tubular sleeve member having a second portion having radially deformable claws having projections at their lower ends shaped to latch beneath the bead of the cartridge when urged theretoward;

separate displacing means mounted on said members, and engaging the core member and the sleeve member and operative when said projections are latched to displace the core member axially with respect to the sleeve member toward the cartridge for fluid-tight coupling of the connecting means with the valve; and

stop means axially fixed with respect to the core member and extending radially thereof, and located to abut and support the bead when said projections are latched and said core member is displaced toward the cartridge.

4,207,935

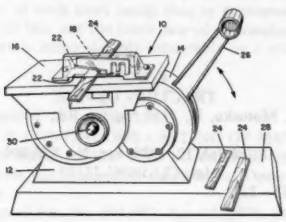
FLYWHEEL-OPERATED TOY WOODWORKING APPARATUS

Gerard L. Lambert, Torrance, and John S. Cook, Redondo Beach, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jul. 13, 1978, Ser. No. 924,119

Int. Cl.[2] B27C *9/00*; A63H *33/30*

U.S. Cl. 144—1 R **12 Claims**



1. In an apparatus for performing machining operations on an article of wood or the like, the combination comprising:

a housing;

a shaft member rotatably mounted within said housing;

means within said housing for rotating said shaft member;

a clutch member coupled to said shaft member for rotation therewith;

a machining tool for performing a machining operation on said article; and

another member mounted on said shaft member for axial displacement relative thereto, said another member in a first position being stationary relative to said housing and in a second axially displaced position engaging said clutch member for rotation therewith, said another member having eccentric means engaging said machining tool for reciprocating said machining tool in response to rotation of said another member in said second position.

4,207,936

TEXTURED WOOD SURFACING

Raymond L. Arbour, R.F.D. #1, Gardiner, Me. 04345

Filed Nov. 1, 1978, Ser. No. 956,484

Int. Cl.[2] B27M *1/08*; B27L *11/00*

U.S. Cl. 144—320 R **2 Claims**

1. A method for texturing the surface of wood to impart a layer of randomly oriented grain fragment separations over the surface providing a rough appearance comprising:

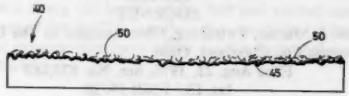
placing a plurality of randomly distributed but vertically parallel and rigidly mounted pointed shredding nails on the wood surface;

moving the plurality of pointed shredding nails along the surface of the wood generally in the direction of the grain of the wood surface;

bearing down to engage the pointed tips of the shredding nails into the grain of the wood to a depth of approximately one eighth of an inch;

alternately bearing down with sufficient pressure to engage the pointed tips of the shredding nails into the grain of the wood to a depth of approximately one eighth inch and decreasing the bearing pressure;

orienting and controlling the direction of movement and travel of the pointed shredding nails in the general direction of the grain but at a small angle at variance with the grain direction for providing shredded grain fragment separations according to the following steps in the size range of one eighth to one fourth inch in length;



ripping and shredding fragments of the grain as the pointed shredding nails cross the grain with alternately increasing and decreasing bearing pressure and at a small angle slightly at variance to the grain direction, leaving shredded fragments still attached to the wood surface at one end;

lifting and randomly orienting the shredded fragments of grain still attached to the wood surface as the shredding nails move along the surface with increasing and decreasing bearing pressure thereby imparting a rough appearance of randomly oriented grain fragment separations covering the surface; varying the direction of movement of the pointed shredding nails with respect to the grain direction and within a small angular range around the grain direction to provide a spectrum of shredded grain fragment separation lengths from $\frac{1}{8}$ to $\frac{1}{4}$ inch, said angular range varying from a larger angle yielding grain fragment separations of approximately $\frac{1}{8}$ inch in length to a smaller angle yielding grain fragment separations of approximately $\frac{1}{4}$ inch in length.

4,207,937

FLEXIBLE BULK CONTAINER

Allan M. Sandeman, and James D. Bell, both of Dundee, Scotland, assignors to Tay Textiles Limited, Dundee, Scotland

Filed Aug. 3, 1978, Ser. No. 930,783

Claims priority, application United Kingdom, Aug. 6, 1977, 33076/77; Aug. 26, 1977, 36051/77; Nov. 18, 1977, 48179/77; May 31, 1978, 25798/78; May 31, 1978, 25799/78; May 31, 1978, 25800/78

Int. Cl.[2] B65D *33/02*

U.S. Cl. 150—1 **21 Claims**

1. A flexible bulk container comprising:

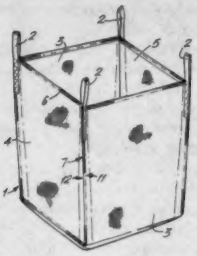
(a) a bag portion of woven fabric having side walls and a closed bottom,

(b) flanges of at least double thickness formed from the side walls and extending downwardly from the upper end of the side walls,

(c) lifting means being attached to the flanges at the upper end of the side walls,

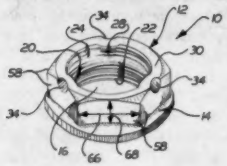
(d) the warp threads of the fabric constituting the side walls extending in the vertical direction, and

(e) the strength of the warp per unit width in the region of attachment of the lifting means along each said flange



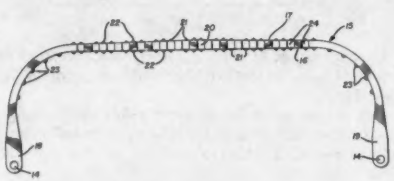
being greater than that over at least the major part of the remainder of the side walls.

4,207,938
LOCKNUT
Harold J. Mortus, Twinsburg, Ohio, assignor to The Lamson & Sessions Co., Cleveland, Ohio
Filed Aug. 21, 1978, Ser. No. 935,262
Int. Cl.[2] F16B *39/30*
U.S. Cl. 151—21 B **2 Claims**



1. A lock nut for cooperating with standard thread convolutions on an externally threaded member, said lock nut comprising a metal nut body having a base, a curved crown end portion, and an axial opening extending through the nut body between said base and said crown end portion, a screw thread formed in a sidewall of said opening, said screw thread including a plurality of standard thread convolutions and a plurality of lock thread convolutions, said lock thread convolutions being disposed adjacent to the crown end portion of the nut body, each of said lock thread convolutions including a plurality of lock sections which project radially inwardly of the standard thread convolutions to interfere with the thread convolutions on the externally threaded member to thereby provide a locking action between the lock thread convolutions and the standard thread convolutions on the externally threaded member, said nut body having a plurality of flat side surfaces disposed in a hexagonal array about the nut body and intersecting the crown end portion of the nut body, each of said flat side surfaces having a height which is measured along a line extending parallel to a central axis of the opening extending through the nut body, each of said flat side surfaces having a width which is measured along a line extending perpendicular to the central axis of the opening extending through the nut body and which is at least twice as great as the height of the flat side surface, and a plurality of indentations formed in said side surfaces of the nut body at locations radially outwardly of said locking sections, each of said indentations being defined by continuously curving surface having a pair of continuously curving edges which intersect at peaked end portions of the indentations, a first one of the pair of continuously curving edges of each of said indentations being formed at a continuously curving line of intersection between the crown end portion of the nut body and the continuously curving surface of the indentation, a second one of the pair of continuously curving edges of each of said indentations being formed at a continuously curving line of intersection between a flat side surface of the nut body and the continuously curving surface of the indentation, said first and second continuously curving edges of each of said indentations being spaced a maximum distance apart at their central portions which are disposed midway between the peaked end portions of the indentation, each of said indentations having a height which is measured along a line disposed in the plane of a flat side surface and extending parallel to the central axis of the opening, the height of each of said indentations being less than one third of the height of one of said flat side surfaces, each of said indentations having a width which is measured along a line extending between the peaked end portions of the indentation and which is less than one third of the width of one of said flat side surfaces, the continuously curving surface of each of said indentations forming a portion of a cylinder which has a longitudinally extending central axis, the longitudinally extending central axis of each cylindrical indentation surface intersecting the central axis of said opening extending through the nut body at a point disposed outwardly of the crown end portion of the nut body in a direction away from the nut body, the longitudinally extending central axis of each cylindrical indentation surface intersecting the central axis of said opening through the nut body at the same angle which has a magnitude of at least thirty degrees to the central axis of the opening.

4,207,939
TRACTION DEVICE
Stephen J. Motosko, II, 3130 Shirley Rd., Youngstown, Ohio 44502
Filed Jul. 10, 1978, Ser. No. 923,480
Int. Cl.[2] B60C *27/20*
U.S. Cl. 152—221 **5 Claims**



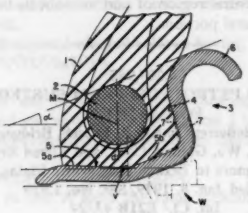
1. In a traction device for a vehicle tire having a plurality of straps transversely of the tire in circumferentially spaced relation and engaged on annular members on either side of said tire; the improvement comprising said straps, each of which consist of an elongated distortion resistant synthetic resin body member having a center section, curving sections at either end of said center section and right angular apertured end sections, a plurality of longitudinally spaced wide rectangular notches formed in the longitudinal edges of said body member, a plurality of longitudinally spaced transversely extending triangularly shaped raised ridges on the inner and outer surfaces of said body member, said triangularly shaped raised ridges ending in said notches, the arrangement being such that the curving and right angular end sections extend alongside the side walls of said vehicle tire with the center section engaging the tread area of said vehicle tire.

4,207,940

PNEUMATIC TIRE BEAD SEAT

Jack Roger, Romagnat, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Mar. 3, 1978, Ser. No. 883,322
Claims priority, application France, Jul. 3, 1977, 77 06890
Int. Cl.[2] B60C *15/00*
U.S. Cl. 152—362 R 4 Claims



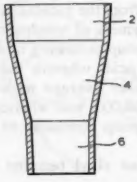
1. The assembly of a large size pneumatic tire for a heavy off the road vehicle and two annular bead seats, one for each bead of the tire, characterized by the fact that each annular bead seat has a lateral face terminating in a flange and an inner face with a heel portion adjacent said lateral face and a toe portion meeting at a vertex and forming in radial cross section the shape of a very open V open toward a bead, and each bead has a reinforcing bead wire so arranged that the median plane of the bead wire intersects the toe portion of the inner face at a distance from the vertex at least equal to one-tenth of the diameter of the cross-section of the bead wire, said lateral face being inclined towards the plane of symmetry of the tire, the outer surface of each bead being thus in permanent contact with the lateral face and the inner face of an annular bead seat and the assembly being slidably mountable on a wheel of the vehicle.

4,207,941

METHOD OF CONTINUOUS CASTING OF METAL IN A TAPERED MOLD AND MOLD PER SE

Lorne R. Shrum, 820 Manchester Rd., London, Ontario, Canada (N6H 4J6)

Continuation of Ser. No. 694,952, Jun. 11, 1976, abandoned.
This application Jul. 13, 1977, Ser. No. 815,261
Claims priority, application United Kingdom, Jun. 16, 1975, 25542/75
Int. Cl.[2] B22D *11/00*
U.S. Cl. 164—82 12 Claims



1. A method for the continuous casting of metals in a tubular copper mold comprising:

providing a substantially vertically oriented continuous casting mold having an entry section in which, when the mold is in use, a meniscus defining the top level poured into the mold may be established, a first tapered section of continually decreasing internal periphery extending downwardly from the entry section and a second tapered section extending directly from the lower end of the first tapered section, the second tapered section having an internal periphery continually decreasing at a lesser rate of reduction than a rate of reduction of said first tapered section;

pouring metal into said mold to establish the meniscus in the entry section, said metal having a linear solidification shrinkage value, the total degree of reduction in the internal periphery of the first tapered section being equal to between 25% and 60% of the linear solidification shrinkage value of the metal being cast;

withdrawing the casting from the mold at a rate to enable a solidified shell of metal to be formed in the first tapered section of sufficient rigidity to withstand the ferrostatic pressure of the still molten metal within the casting;

said withdrawing of the casting being such that the rate of external peripheral contraction of the shell as it passes through the second tapered section of the mold is greater than the rate of internal peripheral reduction of said second tapered section and such that the rate of external peripheral contraction of the shell as it passes through the second tapered section is less than the rate of internal peripheral reduction of the first tapered section, and

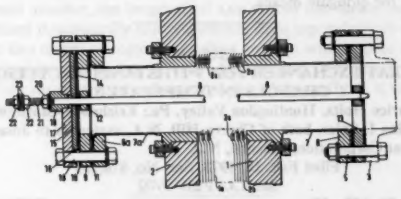
said withdrawing of the casting being such that the cumulative reduction of the internal periphery of the mold at any location along the length of the first and second tapered sections of the mold is less than the cumulative reduction of the external periphery of the casting formed therein at said location.

4,207,942

PLATE HEAT EXCHANGERS

Colin T. Cowan, Horley, and Alan P. Crane, Burgess Hill, both of England, assignors to A.P.V. Company Limited, Crawley, England

Filed Jul. 26, 1978, Ser. No. 928,245
Claims priority, application United Kingdom, Sep. 26, 1977, 39995/77
Int. Cl.[2] F28F *3/00*
U.S. Cl. 165—1 6 Claims



2. In a plate heat exchanger comprising a pack of gasketed metal plates arranged in spaced face to face relationship to define flow spaces for heat exchange media between the plates, the plates having aligned apertures to form supply and discharge ports for the heat exchange media; the improvement that at least one electrode is mounted in a manner to be insulated from the metal of the plates and extending along one of the ports formed by the aligned apertures.

4,207,943

COUNTERCURRENT SOLID-TO-SOLID HEAT TRANSFER APPARATUS AND METHOD

James H. Gardner, and Noel H. de Nevers, both of Salt Lake City, Utah, assignors to Oros Company, Salt Lake City, Utah

Filed Mar. 28, 1979, Ser. No. 24,669
Int. Cl.[2] F28C *3/10*
U.S. Cl. 165—1 14 Claims

2. Counterflow heat exchange apparatus for solids comprising:

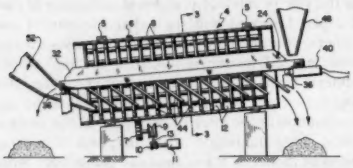
a generally cylindrical drum rotatable about the cylindrical axis thereof, said drum being oriented so that said axis is

positioned at an acute angle with the horizontal or at the horizontal,

means mounted in said drum for carrying material from the bottom of the drum to near the top thereof as the drum is rotated, such material falling from said carrying means as the material is rotated to near the top,

elongate means disposed within said drum to extend from near a first end of said drum downwardly at an angle with respect to the horizontal to near the other end of said drum, said elongate means having a bottom formed with a plurality of apertures therein,

vane means positioned either above or underneath said elongate means or both to guide material falling either from said carrying means or through said apertures toward said first end and out of the drum,



means for introducing into said elongate means near said first end of the drum a first granular material whose particles are generally of a size too large to pass through said apertures,

means for introducing into the other end of said drum a second granular material whose particles are generally of a size small enough to enable passage thereof through said apertures,

means for rotating said drum so that said second material is carried upwardly in the drum by the carrying means to then fall therefrom onto said elongate means, and

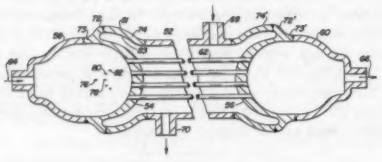
means for causing said elongate means to vibrate so that said first material is caused to move downwardly in the elongate means to mix with said second material and said second material is caused to pass through the apertures in the elongate means.

4,207,944

HEAT EXCHANGER FOR WITHSTANDING CYCLIC CHANGES IN TEMPERATURE

Maurice Holtz, Huntingdon Valley, Pa.; Krishna P. Singh, and Alan I. Soler, both of Cherry Hill, N.J., assignors to Joseph Oat Corporation, Camden, N.J.

Filed Feb. 15, 1978, Ser. No. 878,139
Int. Cl.[2] F28F 9/02
U.S. Cl. 165—82 **7 Claims**



1. A heat exchanger comprising a shell having an inlet and an outlet, first and second tube sheets, each tube sheet having a pair of flanges at its periphery, each tube sheet having one flange connected to an end of the shell by a weld, each tube sheet having its other flange connected to a channel by a weld, a plurality of parallel tubes supported by said tube sheets and disposed within said shell for heat exchange relationship with respect to fluid in said shell, each end of each tube being in communication with one of said channels, means including said flanges on said tube sheets for enabling the tube sheets and the adjacent portion of the shell and channel to withstand cyclic changes in fluid temperatures, said means including a curved major face on said tube sheets and curved surfaces on transition pieces providing a smooth transition with said major faces at the area where said shell is connected to the periphery of said tube sheets, said major faces of said tube sheets facing the shell interior and being generally semi-spherical convex surfaces, untubed peripheral portions of said convex surfaces cooperating with the juxtaposed curved surfaces on the inner periphery of said transition pieces to define toroidal regions of low turbulence, and the central region of said tube sheets being thicker than said peripheral portions.

4,207,945

RECOVERING PETROLEUM FROM SUBTERRANEAN FORMATIONS

Wilbur L. Hall, Bellaire; Charles R. French, Bridgeport, both of Tex.; Ching H. Wu, Golden, Colo., and Alfred Brown, Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,520
Int. Cl.[2] E21B 43/24
U.S. Cl. 166—272 **6 Claims**

1. In a process for recovery of petroleum from a subterranean formation wherein steam is injected via an injection well into said subterranean formation and wherein petroleum is produced via a production well from said formation; the improvement which comprises:

injecting with said steam a petroleum fraction containing naturally occurring compounds selected from the group consisting of phenolic compounds, carboxylic acids, and mixtures thereof, which petroleum fraction is volatile in the presence of said steam, in an amount sufficient for increasing production of petroleum from said subterranean formation.

4,207,946

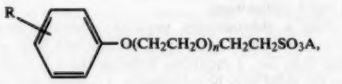
TERTIARY RECOVERY PROCESS

Warren C. Haltmar, and Elsa S. Lacey, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 17, 1978, Ser. No. 925,334
Int. Cl.[2] E21B 43/22
U.S. Cl. 166—274 **5 Claims**

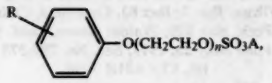
1. A process for recovering hydrocarbons from a hydrocarbon-bearing formation penetrated by an injection well and a production well which comprises first injecting into the formation via the said injection well an aqueous solution of about 0.1 to about 4.0 weight percent of a vinylpyrrolidone polymer followed by injecting into the formation via the said injection well an aqueous solution of about 0.05 to about 5.0 weight percent of a surfactant, and finally recovering hydrocarbons via the said production well, wherein the said vinylpyrrolidone polymer is selected from the group consisting of polyvinylpyrrolidone and copolymers of vinylpyrrolidone and a material selected from the group consisting of acrylamide, acrylic acid and vinyl sulfonic acid, wherein the said vinylpyrrolidone polymer has a number average molecular weight of about 50,000 to about 1,000,000, and wherein the said surfactant is selected from the group consisting of a water-soluble petroleum sulfonate and

(a) polyethoxylated alkyl benzene sulfonates having the formula:



wherein R is alkyl of from 8 to 22 carbon atoms, n is an integer of from 2 to about 10 and A is selected from the group consisting of hydrogen, sodium, potassium and the ammonium ion,

(b) polyethoxylated alkyl benzene sulfates having the formula:



wherein R and A and n have the same meaning as previously described,

(c) polyethoxylated alcohol sulfates having the formula:

$$RO(CH_2CH_2O)_mSO_3A,$$

wherein R and A have the same meaning as previously described and m is an integer of from 2 to about 18 and

(d) polyethoxylated alcohol sulfonates having the formula:

$$RO(CH_2CH_2O)_{m-1}CH_2CH_2SO_3A,$$

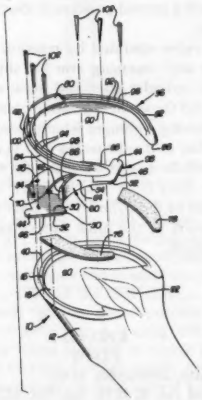
wherein R, m and A have the same meaning as previously described.

4,207,947

MEANS FOR INCREASING TRACTION IN RACEHORSE HORSESHOES

Rick R. Cope, Oklahoma City, Okla., and Delbert L. Rosengrants, Victorville, Calif., assignors to Jojan, Inc. and David A. Necco, both of Oklahoma City, Okla.

Filed Aug. 26, 1977, Ser. No. 828,048
Int. Cl.[2] A01L *1/04, 7/04*
U.S. Cl. 168—29 **13 Claims**



1. An insert for use with a racehorse shoe having a front end calk, comprising:

a plate adapted to be nailed to the horse's hoof between the shoe and the hoof,

said plate having a forward curved edge to

area portions of said plate having means to permit nailing of the plate to the hoof with nails securing the shoe to the hoof, and

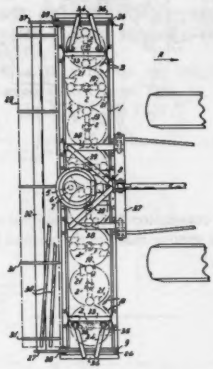
turf engaging means extending downwardly from the plate and rearwardly of the front calk on the shoe.

4,207,948

SOIL CULTIVATING IMPLEMENTS

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Feb. 28, 1978, Ser. No. 882,157
Claims priority, application Netherlands, Feb. 25, 1977, 7702015
Int. Cl.[2] A01B *33/06*
U.S. Cl. 172—59 **14 Claims**



1. A soil cultivating implement comprising a frame and at least one soil working member being rotatably mounted on a shaft supported by said frame, said member being rotatable about a first upwardly extending axis defined by said shaft and driving means connected to rotate said member, said member comprising a carrier on said shaft and downwardly extending elongated tine means in holders at the outer ends of arms of said carrier, each time means being journalled in a corresponding holder for free rotation about a second axis that is inclined to the vertical, and said second axis extending downwardly and forwardly with respect to the normal direction of rotation of said member, the longitudinal axis of said tine means being inclined downwardly and rearwardly from top to bottom and said tine means occupying a trailing position with respect to a respective arm during travel, whereby said tine means can deflect about the second axis and move upwardly at it turns about that axis.

4,207,949

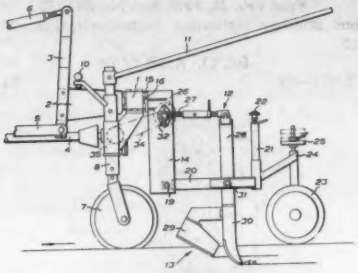
MACHINE FOR THE ROOT-PRUNING OF PLANTS GROWING IN ROWS

Stig L. Sjövall, Kävlinge, Sweden, assignor to Skogsstyrelsen, Jönköping, Sweden

Filed Mar. 30, 1978, Ser. No. 891,619
Int. Cl.[2] A01B *39/12*
U.S. Cl. 172—68 **8 Claims**

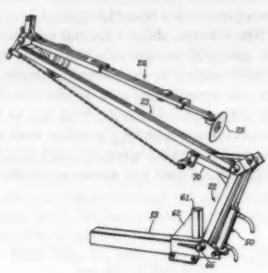
1. A machine for the root-pruning of plants growing in rows, such that the root system of the plants will be small in circumference but finely-branched, the machine having for each plant row a knife unit for forming a groove in the ground and root-pruning the plants, each said knife unit comprising a first and second knife, said first knife being forward of said second knife and lying in a vertical plane parallel to the direction of travel of the machine, said second knife having a cutting blade comprising a substantially vertical blade portion and a substantially horizontal blade portion, said first and second knives being

rigidly interconnected and arranged for reciprocatory movement in a direction parallel to the direction of travel of the



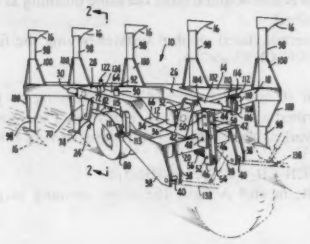
machine, and a compactor disposed behind said second knife for reclosing the groove made in the ground by the knife unit.

4,207,950
AGRICULTURAL ROW MARKER
Jon E. Kinzenbaw, P.O. Box 525, Wiliamsburg, Iowa 52361
Filed Apr. 27, 1978, Ser. No. 900,498
Int. Cl.[2] A01B *17/00*
U.S. Cl. 172—126 **10 Claims**



1. A row marker for an agricultural implement including a frame comprising: a boom pivotally mounted to said frame; marker arm means carrying a marker on a distal end and pivotally mounted to the distal end of said boom at a proximal end for movement between an extended or use position and a folded or storage position; and a hydraulic ram having one end pivotally connected to said frame and the other end pivotally connected to said marker arm means; said boom, arm means and ram being constructed and arranged such that when said ram is actuated in a first direction to urge said marker to the storage position from the use position, said arm means will raise to an upright position for a first portion of movement of the ram, then said boom will be pivoted to an upright position for continued movement of said ram in said first direction, to thereby fold said arm means above said frame after said arm means has been folded relative to said boom, and when said ram is actuated in a reverse direction to move said arm means to the use position, said boom will first be rotated to the horizontal position, then said arm means will be rotated to the use position for continued movement of said ram in said reverse direction.

4,207,951
TWO-WAY, MULTIPLE BOTTOM PLOW WITH LIFT ASSIST
Allan K. Wilcox, Rte. 1, Box 141, Walnut Grove, Calif. 95690; Mark I. Wilcox, Rte. 1, Box 83, Courtland, Calif. 95615, and Steven L. Peek, Box 929, Walnut Grove, Calif. 95690
Filed May 23, 1977, Ser. No. 799,373
Int. Cl.[2] A01B *3/30*
U.S. Cl. 172—225 **9 Claims**

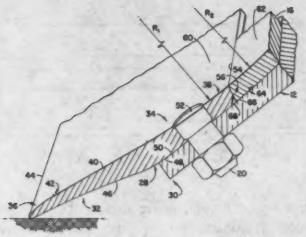


1. A two-way, multiple bottom plow comprising:
(a) a plow frame adapted at its forward end for connection to a tractor,
(b) a plow supporting bar normally disposed at an angle to said plow frame for supporting two sets of oppositely disposed plow bottoms,
(c) a reversing arm having opposite ends, said arm fixed at one end to the plow supporting bar and pivotally connected to the plow frame at its opposite end,
(d) fluid pressure means including a cylinder and a movable piston therein and a rod for the piston, said cylinder being pivotally fixed to the plow frame and said piston rod being pivotally fixed to said reversing arm, said fluid pressure means being adapted to introduce pressure fluid into the cylinder to start rotation of said reversing arm and plow supporting bar from a first position at one side of the plow frame toward a second position at the opposite side of the plow frame,
(e) a control valve operated by rotation of said plow supporting bar and reversing arm for shutting off pressure fluid to said cylinder after said plow supporting bar has passed beyond the vertical position comprising a deceleration valve having a plunger which is engaged by the plow supporting bar as it approaches said vertical position, and
(f) means in said fluid pressure means for restricting the flow of pressure fluid from said cylinder when the flow of pressure fluid to the cylinder has been shut off to control further rotation of the plow supporting bar beyond the vertical position.

4,207,952
PLOW
Terry L. Van Natta, Davenport, Iowa
Filed Jul. 5, 1978, Ser. No. 922,028
Int. Cl.[2] A01B *3/00*
U.S. Cl. 172—754 **10 Claims**

1. In a plow comprising: structure having an elongated lower support shoulder; a moldboard fixed to the upper portion of the structure; said moldboard having a soil working surface with a lower share receiving edge spaced above the shoulder of the structure; a share having upper and lower edges and fixed to the structure and abutting along its upper edge the lower edge of the moldboard, said share having upper and lower surfaces diverging from each of its respective upper and lower edges to a thickened and elongated mid-portion

overlying and supported by said shoulder; the upper surface of said share further being smooth and contoured to be continuously concave with the soil working surface of the moldboard adjacent its share receiving edge.



4,207,953

PARTICULATE MATERIAL INTERCEPTING ARRANGEMENT FOR A HAND HELD TOOL

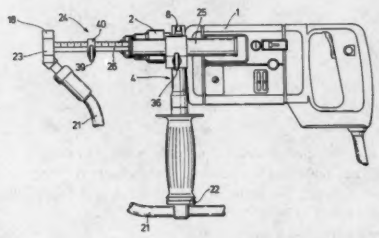
Wilbert Reibetanz, Leinfelden; Horst Sigg, Stuttgart; Herbert Wiesner, Leinfelden; Karl Wanner, Echterdingen; Gernot Hänsel, Stuttgart; Karl Seitz, Filderstadt, and Manfred Bleicher, Leinfelden, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 22, 1977, Ser. No. 863,164

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1977, 2705410

Int. Cl.[2] B23B *30/166, 45/00*

U.S. Cl. 175—209 **22 Claims**



1. An arrangement for intercepting particulate material removed by a tool element, particularly a drill, of a hand-held tool from a structure, comprising, in combination, an intercepting member having an open end and a closed end having an opening therethrough; means for mounting said intercepting member on the tool so that the tool element passes through said opening and, in use, said open end of said intercepting member contacts the structure about the tool element, and for retrogressive displacement from an initial position in which said intercepting member surrounds a leading end portion of the tool element to a terminal position in which the leading end portion of the tool element extends axially beyond the intercepting member, including two elongated hollow mounting members one of which is telescopically received in the other and both of which extend parallel to the tool element; said one mounting member has a free end portion remote from said other mounting member, and a bracket connected to said intercepting member and mounted on said free end portion of said one mounting member in a cantilevered fashion, said bracket is an integral part of said intercepting member, the latter being generally cup-shaped; means for communicating the interior of said intercepting member with a subatmospheric pressure source, including a nipple on said intercepting member with a subatmospheric pressure source and a base; an auxiliary handgrip connected to the tool; means for supporting said hose on said auxiliary handgrip, including a holding ring affixed to said auxiliary handgrip; and means for urging said intercepting member toward said initial position thereof, including a compression spring having ends which are respectively received in the interiors of, and which act in opposite directions on, said mounting members.

4,207,954

CORE BIT HAVING AXIAL CONICAL CORE BREAKER

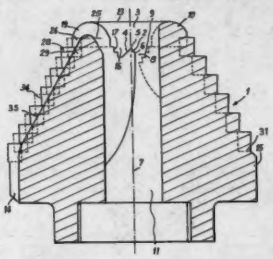
Robert Jerome, Brussels, Belgium, assignor to Compagnie Francaise des Petroles, Paris, France

Filed Mar. 31, 1978, Ser. No. 892,357

Claims priority, application France, Mar. 31, 1977, 77 09825

Int. Cl.[2] E21B *9/16*

U.S. Cl. 175—330 **9 Claims**



1. An earth drilling bit, comprising:

(a) a rotatable, generally cylindrical body member having an axial passage therethrough for drilling sludge or the like and an annular cutting surface on a leading end thereof, whereby a central core is formed during drilling which extends into the axial passage, and

(b) a cone-shaped drilling member integral with and made of primarily the same material as the body member, disposed within the axial passage, axially aligned with said passage, and having its apex directed toward the leading end of the body member, whereby said cone-shaped drilling member extends into, breaks up and cuts away the central core as it enters the axial passage.

4,207,955

DISPLAY HOLDING DEVICE IN ELECTRONIC DIGITAL DISPLAY TYPE SCALE

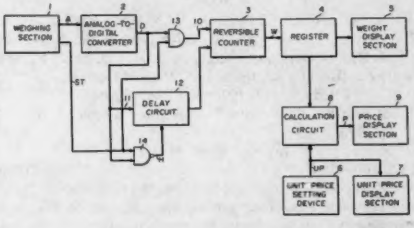
Kazuharu Teraoka, Tokyo, Japan, assignor to Teraoka Seikosho Co., Ltd., Japan

Filed Dec. 11, 1978, Ser. No. 968,086

Claims priority, application Japan, Dec. 23, 1977, 52-173674; Feb. 28, 1978, 53-25565; Feb. 28, 1978, 53-25566; Jul. 31, 1978, 53-105123

Int. Cl.[2] G01G *23/37*

U.S. Cl. 177—25 **16 Claims**



1. In an electronic digital display type scale in which the

weight of a load applied to a weighing section is converted into an electrical signal so that various data representative of, for instance, the weight and price of the load are displayed by data display means, the improvement comprises a display holding device which, when a part of said load is removed therefrom, outputs a hold signal automatically to hold said various data displayed by said data display means for a predetermined period of time, and when it has passed said predetermined period of time, the holding operation is automatically released.

4,207,956

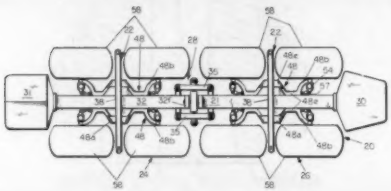
APPARATUS FOR INDIVIDUALLY STEERING AND DRIVING VEHICLE WHEELS

Bruce J. McColl, Whitby, Canada, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 842,801, Oct. 17, 1977, Pat. No. 4,153,265. This application Aug. 17, 1978, Ser. No. 934,458

Int. Cl.[2] B62D *61/10*

U.S. Cl. 180—24 **8 Claims**



4. In a self propelled vehicle adapted for use over roadless terrain having an elongated bed frame, a quad wheel assembly for supporting a portion of said bed frame comprising:

(1) a primary pivot structure adapted for mounting on said bed frame for pivotal movement about a horizontal roll axis parallel to said bed frame;

(2) a pair of walking beams respectively pivotally secured to the lateral sides of said pivot structure for movement in a vertical plane about a transverse axis, each said walking beam being generally truncated W-shaped in a horizontal plane with the pivotal mounting axis passing through the truncated center portion of the W-shape;

(3) means on each of each W-shaped walking beam for respectively pivotally mounting the medial portion of (a) an elongated wheel drive housing for steering movements;

(4) means on said housing supporting a wheel driving motor, the outer end of said housing rotatably supporting a wheel hub driven by said motor, and means connecting said motor and said hub, and

(5) a power actuated extensible and retractable link pivotally connected at one end to the inner end of said wheel drive housing and at the other end to the truncated center portion of the respective truncated W-shaped walking beam, whereby the application of power to said link controls the steering position of a wheel secured to said wheel hub.

4,207,957

DEVICE FOR REDUCTION OF BENDING VIBRATIONS

Rolf V. Sivers, Warmbronn, and Ulrich Layher, Sersheim, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

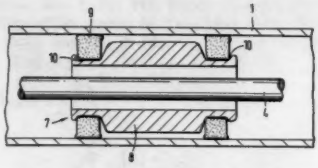
Filed Oct. 17, 1978, Ser. No. 952,045

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1977, 2747225

Int. Cl.[2] F16F *15/12*

U.S. Cl. 180—70 P **9 Claims**

1. A vibration suppressing device for the reduction of bending vibrations on a rigid supporting pipe disposed in the longitudinal direction of a vehicle, which supporting pipe is connected with a drive unit at the rear of the vehicle and an engine at the front, said engine being in driving connection with the rear drive unit via a drive shaft, said drive shaft being positioned inside the said supporting pipe, said device comprising a



vibration suppressing mass, elastic means for attaching said suppressing mass to said supporting pipe without contact with the drive shaft.

4,207,958

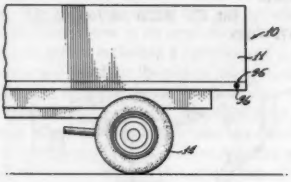
VEHICLE SAFETY BRAKING SYSTEM

Charles S. Viall, Sr., 1150D S. State College Blvd., Anaheim, Calif. 92806; Charles S. Viall, Jr., 3401 Gaviota, Long Beach, Calif. 90008, and Harold S. Viall, 938 S. Chancer, Anaheim, Calif. 92806

Division of Ser. No. 646,287, Jan. 2, 1976. This application Jun. 7, 1978, Ser. No. 913,350

Int. Cl.[2] B60K *28/00*

U.S. Cl. 180—271 **3 Claims**



1. In combination with a vehicle having brakes, a steering wheel, gas pedal, and a reverse gear which are operated at a normal driver's location, a safety device for applying the brakes of said vehicle comprising:

brake applying means; and

means for preventing operation of said brake applying means, including manually operable control means engageable at a second location sufficiently toward the rearward portion of said vehicle so as to require a person located near said second location and able to view obstacles behind said vehicle to operate said manually operable control means, such obstacles not being visible from said normal driving location, said operable control means not engageable by an operator at said normal driver's location, said manually operable control means selectively preventing said vehicle from backing up.

4,207,959

WHEELCHAIR MOUNTED CONTROL APPARATUS

Myron Youdin, Flushing; Mario W. Clagnaz, Jr., Floral Park, and Henry Louie, Brooklyn, all of N.Y., assignors to New York University, New York, N.Y.

Filed Jun. 2, 1978, Ser. No. 911,771

Int. Cl.[2] B62D *1/24*

U.S. Cl. 180—167 **14 Claims**

1. A wheelchair-mounted control apparatus for controlling a powered wheelchair comprising:

a voice processor for converting any of a set of preselected spoken command words into corresponding computer-

recognizable signals, said spoken words corresponding to desired operations for said wheelchair;

a microcomputer operatively connected to said voice processor including an identifier for identifying a particular sequence of said signals, corresponding to a preselected sequence of said spoken commands including a first spoken function command for specifying the function to be performed by said wheelchair and a subsequently spoken

activation command for conditioning said specified function to be performed by said wheelchair, as a command sequence and also including a set of control lines and a first activator responsive to the identification of said command sequence for selectively activating said control lines; and

a wheelchair controller including a left and a right wheel drive motor, for propelling said wheelchair in response to the activation of said control lines.

4,207,960

ENGINE MOUNTING FOR MOTORCYCLES

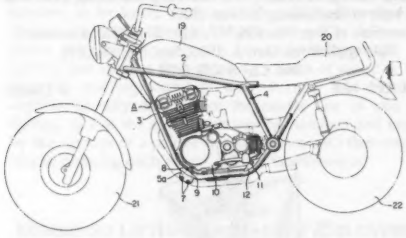
Mashayuki Hashimoto, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Nov. 7, 1978, Ser. No. 958,387

Claims priority, application Japan, Nov. 11, 1977, 52-150689[U]

Int. Cl.[2] B60K *5/12*

U.S. Cl. 180—228 **3 Claims**



1. Motorcycle comprising a frame and an engine mounted thereon through engine mounting means, said engine mounting means including front mounting means comprised of a pair of laterally spaced mounting plates having upper ends respectively connected to opposite sides of the front portion of the engine and lower ends to bracket means extending downwardly from said frame, and rear mounting means comprised of laterally resilient mount means for mounting a rear lower portion of the engine on the frame.

4,207,961

EXCITING METHOD FOR LOGGING BY S WAVE

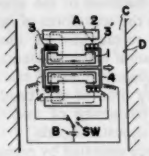
Choro Kitsunezaki, Akita, Japan, assignor to Oyo Corporation, Tokyo, Japan

Filed Sep. 28, 1978, Ser. No. 946,830

Claims priority, application Japan, Feb. 9, 1978, 53-13921

Int. Cl.[2] G01V *1/14*

U.S. Cl. 181—106 **3 Claims**



1. In an exciting method for a logging by means of S wave which includes inserting a wave source into a bore hole containing water and actuating an operating mechanism in the wave source to impart an exciting force to the bore hole wall in the direction prependicular to the axis of the bore hole, so as to generate the S wave having characteristics of predominant radiation in the direction perpendicular to the axis of the exciting force, the improvement comprising abruptly ejecting the water at one side of the wave source intersecting the extension of the axis of the exciting force, while, simultaneously at the opposite side of the wave source, abruptly sucking the water of equivalent volume to that ejected at the first mentioned side, whereby a positive and negative pressure change are indirectly applied through the medium of the water to the two respective sides of the bore hole wall intersecting the extension of the exciting force axis.

4,207,962

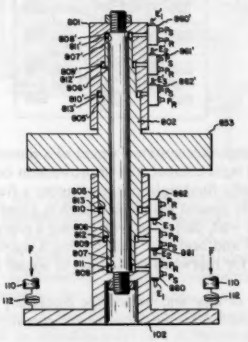
METHODS AND APPARATUS FOR USE IN GENERATING AND TRANSMITTING ACOUSTIC SIGNALS

John V. Bouyoucos, Rochester, N.Y., assignor to Hydroacoustics Inc., Rochester, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,399

Int. Cl.[2] G01V *1/14*

U.S. Cl. 181—119 **31 Claims**



1. For use in the transmission of a train of repetitive or quasirepetitive acoustic signals into a medium of finite tensile strength in response to an input control signal, the method of minimizing the negative dynamic pressure or stress excursions of said acoustic signals with respect to the average pressure or stress present in the absence of said signals and enabling the

maximization of the power of said transmission in a given frequency band, said method comprising

contacting said medium with a movable member, and

applying in direct response to said control signal forces to said member in opposite directions with respect to the average force on said member due to said average pressure or stress to place said medium alternately under compressive and tensile forces with the time duration of the application of the compressive force short compared with the time duration of the application of the tensile force and with the waveform of said tensile forces being approximately rectangular in shape, said compressive force time duration being in excess of one-half period of the upper frequency limit of said frequency band, the lower frequency limit of said band being approximately the repetition frequency of said train of repetitive or quasirepetitive acoustic signals.

29. A seismic source operated by pressurized hydraulic fluid for transmitting seismic signals having n amplitude levels into a medium where n is an integer greater than one, said source comprising

a housing having a bore,

a piston reciprocally movable in said bore,

One of said housing and said piston having a coupling member at one end thereof, said member being arranged to contact said medium,

said piston and bore each having V steps which are spaced longitudinally of each other, one of said piston and housing steps facing in a direction away from said medium,

said steps defining with said bore and said piston wall V chambers in said bore, and

V control valve means for applying said pressurized hydraulic fluid at supply and return pressures in predetermined sequence to said chambers, whereby the number of levels n, equals 2^V.

4,207,963

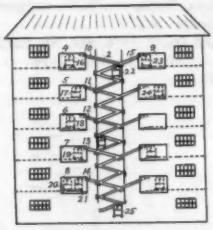
LOUDSPEAKER SYSTEM

Michael Klasco, New York, N.Y., assignor to Integrated Sound Systems Inc., Long Island City, N.Y.

Filed Dec. 11, 1978, Ser. No. 969,390

Int. Cl.[2] H05K *5/00*

U.S. Cl. 181—147 **5 Claims**



1. In a loudspeaker system formed of a plurality of speakers inside a fluid tight cabinet, the improvement comprising

a substantially fluid tight cabinet having a front wall and an oppositely spaced rear wall which is generally parallel to the front wall, said front wall having a plurality of speaker openings and said rear wall having a substantial radiator opening for rearward projection of sound from said cabinet;

a plurality of low and mid-range frequency speakers sealingly mounted to the front wall opposite speaker openings;

a plurality of high frequency range speakers sealingly mounted to the front wall opposite speaker openings therein;

a passive radiator sealingly mounted opposite the radiator opening of the rear wall to project sound towards the rear from said cabinet, said radiator further being mounted in a generally symmetrical manner relative to both said low and mid-range frequency speakers and said high frequency speakers to impart balanced loads on said passive radiator, said passive radiator beng peripherally mounted to the rear wall without central support for improved flat frequency response, said passive radiator further being so sized to enable at least partial absorption of acoustic energy of mid-range frequencies produced from the back of said low and mid-range speakers.

4,207,964

SOUND ABSORBING AND DIFFUSING UNIT, AN ACOUSTIC SCREEN AND A DECORATIVE SOUND ABSORBING PANEL

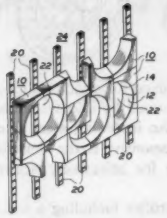
Kazunori Taguchi, 6-8, Sakanoshita, Kamakura City, Kanagawa Prefecture, Japan

Division of Ser. No. 701,016, Jun. 30, 1976, Pat. No. 4,122,915. This application Oct. 23, 1978, Ser. No. 953,454

Claims priority, application Japan, Jun. 30, 1975, 50-81296; Jul. 12, 1975, 50-96921[U]

Int. Cl.[2] E04B *1/99*

U.S. Cl. 181—284 **2 Claims**



1. A sound absorbing and diffusing unit made of a porous sound absorbing material, said unit comprising two planar side surfaces, an arcuate surface opposed to said side surfaces, said arcuate surface being inclined with respect to said side surfaces, a rear surface formed between said side surfaces and said arcuate surface, and a plurality of fitting means fixed to said rear surface.

4,207,965

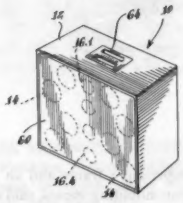
GLIDING CARS AND TRACKS TYPE HIGH BUILDING EMERGENCY ESCAPING DEVICE

Fu Chiang-Cheng, P.O. Box 144, and Yang Yin-Lung, P.O. Box 865, both of Kaohsiung, Taiwan (800)

Continuation of Ser. No. 680,747, Apr. 27, 1976, abandoned. This application Oct. 3, 1977, Ser. No. 842,271

Int. Cl.[2] A62B *1/02*

U.S. Cl. 182—13 **3 Claims**



1. An improved apparatus for emergency escape from a conventional zigzag tracks type emergency escape device comprising a number of loader cars in basket shape, each car having a ball bearing roller on an axle at the top back side of

the car for supporting and sliding along the tracks, said axle is hollowed in its center, a worm screw protruds all the way through the hollowed center of said axle and connected to a lining brake disk, said screw is operatable by a rocking lever inside the car to bring said lining disk toward the back side of the car and clamps the track for stopping or slowing down the sliding speed of the car in case of necessity, two universal wheels being mounted at both rear side edges of the car for counteracting the momentum of the car against the surface of the tracks and add free sliding movability of the car, four universal small wheels located at the bottom of each car, the car while carrying escapee or properties can be pushed on said wheels by other person until the car properly gets in an exit tunnel which is communicating with the tracks, two paralled apertures on the floor of the car normally covered by couple of light spring loaded slider plates for stretching the rider's feet on running in case of necessity.

4,207,966

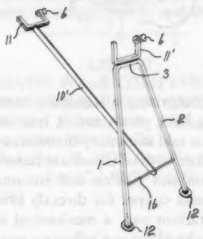
MULTIPURPOSE STAGING HORSE

Jean-Marie Aubin, 1071 Tiffin, Longueuil, Quebec, Canada (J4P 3G7); Lionel Graveline, 348 St. Francois St., St-Hyacinthe, Quebec, Canada (J2S 5E8), and Leonard Rioux, 307B St. Simon St., St-Hyacinthe, Quebec, Canada (J2S 5C1)

Filed Jun. 13, 1979, Ser. No. 48,020

Int. Cl.[2] E04G *1/00*

U.S. Cl. 182—181 **2 Claims**



1. A multipurpose staging horse comprising two generally upright, spaced-apart and coplanar legs which converge towards each other upwardly, said legs being rigidly secured together near their upper and lower ends by top and bottom horizontal bar members respectively, a first upwardly opening U-shaped stirrup rigid with said top horizontal bar, a brace pivotally and slidably mounted on said bottom horizontal bar member at its lower end, and a second, upwardly opening U-shaped stirrup secured to the upper end of said brace, screw means projecting transversely inwardly through one side of each of said stirrups for tightening a beam of wood or the like received and supported in said stirrups, said brace being slightly laterally offset from the center line of said second stirrup, so that the same beam can be received and supported by the stirrups of a pair of staging horses with their respective braces crossing each other without interference.

4,207,967

COMBINED LIFTING MECHANISM AND OVERHEAD GUARD FOR LIFT VEHICLES

Robert N. Stedman, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 633,349, Nov. 19, 1975, abandoned. This application Feb. 6, 1978, Ser. No. 875,829

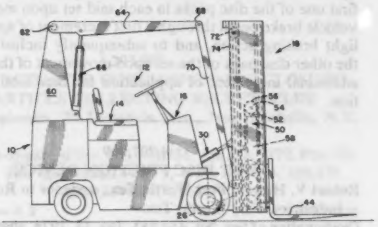
Int. Cl.[2] B66B *9/20*; B66F *9/06, 17/00*

U.S. Cl. 187—9 E **15 Claims**

10. In a lift vehicle of a type including a vertical mast assembly arranged at one end of the vehicle with a material handling carriage movably mounted for vertical travel on the mast assembly, a lifting mechanism comprising

an elongated lever pivotably connected adjacent the other end of the vehicle and having a vertically movable end adjacent the mast assembly,

motor means interconnected between the vehicle and lever for pivoting the lever, said motor means mounted to the vehicle adjacent the other end thereof, and



a link having one end pivotably connected with the movable end of the lever, the link also being operatively coupled at its other end with the carriage, the link causing the carriage to be vertically moved on the mast assembly in response to pivotable movement of the elongated lever and arcuate movement of the adjacent movable link.

4,207,968

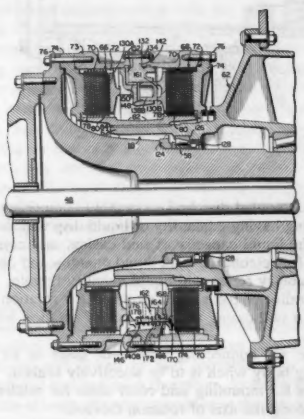
DOUBLE DISC TYPE BRAKE SYSTEM

Richard W. Chamberlain, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 21, 1978, Ser. No. 879,306

Int. Cl.[2] F16D *55/04*

U.S. Cl. 188—71.4 **10 Claims**



1. A double, disc type brake system for wheeled vehicles, including two toroidal disc packs, operationally combined in a working set, for each vehicle wheel to be braked, said disc packs in each set being respectively operationally placed in back to back relationship, multiple hydraulically operated pistons for actuation for each said disc pack, said multiple pistons consisting of two oppositely faced piston sets operatively mounted on opposite sides of a common circular actuator support centrally disposed between the two disc packs, said pistons on each of said sides of said common actuator support being radially circumferentially spaced around said support in circular arrays and mounted for reciprocating operational movement, said pistons on one side of said common actuator support being respectively radially alternatively positionally arranged intermediate said pistons on the opposite said side,

said pistons of each said piston set being respectively operable in unison as a set by movement outwardly to selectively operationally contact and actuate respectively, and substantially circularly thereabout, a said disc pack on one respective side or the other of said common actuator, and a hydraulic system operable to initially actuate a first said piston set and thereby a first one of the disc packs in each said set upon movement of a vehicle brake pedal through a first increment of application for light braking action, and to subsequently inclusively actuate the other disc pack of the set upon movement of the pedal in an additional increment of application for increased braking action.

4,207,969

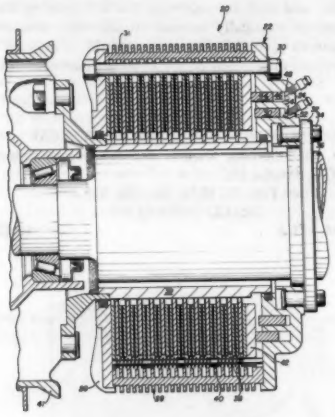
WET DISC FRICTION DEVICE

Robert V. Howell, Fort Worth, Tex., assignor to Robert Howell Industries, Fort Worth, Tex.

Continuation of Ser. No. 432,943, Jan. 14, 1974, abandoned. This application Feb. 25, 1975, Ser. No. 553,068

Int. Cl.[2] F16D *65/853*

U.S. Cl. 188—71.6 **8 Claims**



1. A liquid-cooled disc brake assembly comprising:

(a) a casing having a quantity of liquid disposed therein less than the liquid capacity of said casing, said casing being sealed for retention of said liquid quantity and operable to continuously retain said liquid quantity therein,

(b) a plurality of rotor discs mounted for rotation with respect to said casing about an axis of rotation within said casing,

(c) means for connecting said rotor discs to an external rotating body whch is to be selectively braked,

(d) means for mounting said rotor discs for relative movement along the axis of rotation thereof,

(e) a plurality of stator discs disposed within said housing and having essentially flat, exterior disc surfaces, said flat disc surfaces thereof being arranged perpendicular to said axis of rotation,

(f) means for mounting said stator discs in juxtaposed relationship with respect to said rotor discs and for relative movement along the axis of rotation of said rotor discs while not allowing rotation of said stator discs,

(g) means for biasing said rotor and stator discs to a relatively widely spaced apart position whereby no braking action is performed therewith,

(h) heat exchanging means formed on casing portions that extend generally parallel to said axis of rotation, said heat exchanging means comprising a plurality of fins extending inwardly and outwardly from said casing and generally radially toward and away from said axis of rotation,

(i) means for establishing a closed circulatory loop for said cooling liquid during braking so that said cooling liquid is pumped outwardly from adjacent the axis of rotation of said rotor discs toward said casing heat exchanging fins, splashing thereagainst and thereby frothing, and then is allowed to pass inwardly toward said axis of rotation in response to negative pressure adjacent said axis of rotation, and

(j) first means for moving said rotors and stators toward each other against the bias of said biasing means to effect braking.

4,207,970

DISC BRAKE

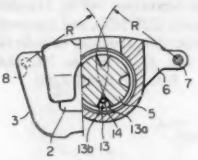
Fumio Shimizu, Kawasaki, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Feb. 10, 1978, Ser. No. 877,553

Claims priority, application Japan, Feb. 19, 1977, 52-19674[U]

Int. Cl.[2] F16D *65/56*

U.S. Cl. 188—71.9 **2 Claims**



1. A disc brake comprising a stationary member, a pair of friction pads having back plates and at least one of which is slidably supported on said stationary member, a pair of pins on said stationary member both of which are removable, a caliper slidably supported on said pins on said stationary member, a piston provided in said caliper for directly pressing the back plate of said one friction pad, a mechanical brake applying mechanism and a brake clearance adjusting mechanism operatively associated with said piston and requiring that said piston be prevented from rotating in said caliper for proper operation of said adjusting mechanism, and a lug on the back plate of said one friction pad, the surface of said piston opposed to said one friction pad having at least one recess therein and said lug being engaged in said recess to prevent rotation of said piston, the sidewalls of said recess being spaced from each other for making the recess sufficiently wide to permit said lug to pass freely into and out of said recess when either one of said pins is removed and said caliper is rotated around the other of said pins, the sidewalls of said recess diverging from each other in the radially outward direction of said piston and respectively lying substantially along arcs of respective circles having said pins as corresponding centers thereof, the angle of inclination of said sidewalls with respect to a radius of said piston being sufficient for disengaging the lug and the sidewall upon rotational movement of said caliper around either of said pins.

4,207,971

RUST PREVENTING DEVICE FOR A ROTOR OF A DISC BRAKE

Masakazu Ishikawa; Hiroyuki Oka; Juichi Shibatani, and Yuichiro Obu, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 14, 1977, Ser. No. 768,697

Claims priority, application Japan, Sep. 2, 1976, 51-116950[U]

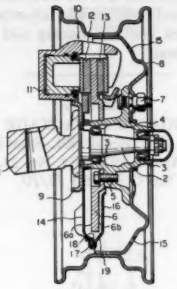
Int. Cl.[2] F16D *63/00*

U.S. Cl. 188—218 A **2 Claims**

1. In an automotive disc brake system comprising a rotor and a permanent stationary dust shield, said rotor having an outer surface adapted to be exposed to the roadway and an inner surface opposite to said outer surface, and said dust shield

covering said outer surface of said rotor and having an outer periphery extending radially beyond an outer periphery of said rotor, the improvement comprising

prior to normal use of said brake system, a flexible, disposable, paper cover means for partially shielding said rotor



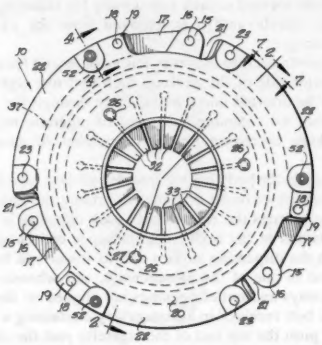
surfaces from the atmosphere and preventing rusting of said rotor surfaces, wherein said cover means comprises a flat annular-shaped portion facing the inner surface of said rotor, an outer peripheral portion snapping onto the outer periphery of said dust shield, and is adapted for easy removal prior to normal use of said brake system.

4,207,972

AUTOMATIC WEAR COMPENSATOR FOR BELLEVILLE SPRING CLUTCHES

Reinhold C. Zeidler, Birmingham, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 26, 1978, Ser. No. 909,756
Int. Cl.[2] F16D *13/75*
U.S. Cl. 192—111 A **21 Claims**



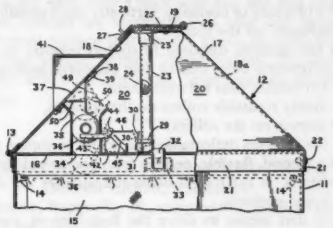
1. A wear compensator for use in a spring-actuated clutch assembly including a friction clutch disc adapted for engagement by a pressure plate and subject to wear during use, a cover member including flanged mounting portions to provide attachment to a driving member surface, a pressure plate having a friction surface, and spring means pivotally mounted in said cover and adapted to urge the pressure plate into engagement with the clutch disc, the wear compensator comprising a pivot ring in operative engagement with the pressure plate and defining a fulcrum surface cooperating with said spring means, said pressure plate having means receiving said pivot ring, camming means between said pressure plate and said pivot ring to alter the distance between the pressure plate friction surface and the fulcrum surface upon relative rotation therebetween, and a plurality of self-adjusting stop means acting between said pressure plate and said cover member to limit the retractive movement of said pressure plate during a clutch release cycle to a predetermined amount regardless of clutch disc lining wear.

4,207,973

ARTICLE ACTUATED COIN DISPENSING CLOSURE FOR ARTICLE COLLECTING RECEPTACLES

Henry Stampleman, 79 Mountain Ave., New Rochelle, N.Y. 10804

Continuation-in-part of Ser. No. 787,031, Apr. 13, 1977, Pat. No. 4,132,303. This application Nov. 9, 1978, Ser. No. 959,175
Int. Cl.[2] G07F *7/06*
U.S. Cl. 194—4 F **2 Claims**

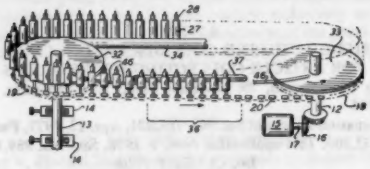


1. An article actuated coin dispensing closure unit for article collecting receptacles, said closure unit comprising a base plate of size and shape corresponding with the cross section of the receptacle to be associated therewith, a peripherally extending flange protruding downwardly from the base plate adapted to externally and telescopically engage said receptacle, lock means for interlocking said flange to said receptacle, a superstructure extending above said base plate and housing article receiving and coin dispensing means, said coin dispensing means being located centrally of said closure unit and comprising a vertically oriented coin storage chamber, an inclined chute adjacent the base of said chamber and extending to a coin pick-up station at one side of said closure unit, movable means for individually transferring a coin from the base of said storage chamber to said chute, guide means in said closure unit forwardly of said coin storage chamber forming a passageway having a contour profile that matches the article to be collected, said guide means extending downwardly through said superstructure to said base plate to establish a passageway to the associated receptacle, movable means extending into said guide means and linked to said movable coin transferring means in order to eject coins therefrom, lockable access means to said coin storage chamber provided at the top of said superstructure, a hinge that is peripherally spaced from said lock means for joining said closure unit to said receptacle, a plate having a profiled aperture formed therein and detachably secured to said superstructure to permit an interchange between plates having different profiled apertures in order to adapt the unit to accept and to reject the articles in response to the profile of the aperture that is formed in said detachably secured plate, a spring tensioned flap hingedly mounted above, centrally of an longitudinally of said guide means providing a spring loaded and selectively openable closure for said guide means and a leaf spring having one end fixedly secured to said unit and the other, free and extending into said guide means, the receptacle having a plurality of baffles therewithin, said baffles each extending more than half way across said receptacle, adjacent baffles being spaced from each other and protruding from opposite sides of the receptacle.

4,207,974
VISUAL INSPECTION APPARATUS

Peter Dragotta, 4 Bodie Rd., Wayne, N.J. 07470

Filed Oct. 5, 1978, Ser. No. 948,771
Int. Cl.[2] B65G *17/24, 47/24*
U.S. Cl. 198—344 6 Claims

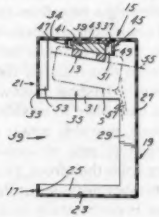


1. A visual inspection apparatus comprising:
(a) a first, flexible, endless loop,
(b) a plurality of normally vertically erect spindles pivotably mounted on the loop,
(c) the spindles disposed in spaced relation to each other sufficiently close that an item disposed thereon for inspection cannot pass between them,
(d) freely rotatable rollers on the spindles,
(e) sleeves on the rollers,
(f) the spindles deflectable from erect to supine position,
(g) a second, flexible, endless loop positioned to engage the sleeves on the rollers when the spindles are deflected to supine position,
(h) a first means to drive the first loop at a pre-selected speed, whereby the linear movement of the rollers on the spindles is controlled,
(i) a second means to drive the second loop at a pre-selected speed, whereby engagement of the second loop with the sleeves on the rollers, rotates the rollers at a controlled separate rate of rotation with respect to the rate of linear movement of the rollers as controlled by the first means to drive.

4,207,975
MAGNETIC SOAP RECEPTACLE

Giuliano Arzillo, 8659 Berwyn, Dearborn Heights, Mich. 48127

Filed Jan. 15, 1979, Ser. No. 3,104
Int. Cl.[2] A47K *5/08, 5/05*
U.S. Cl. 206—77.1 7 Claims

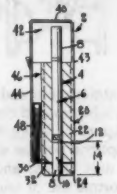


1. A magnetic soap receptacle comprising a molded unitary housing mountable upon a wall or support surface and including a trough base, a pedestal having a back wall and connected to the base and a hood having a top wall connected to said pedestal and overlying said base, defining a storage chamber for enclosing a bar of soap;
a magnet within said hood underlying and connected to said top wall;
there being a magnetic insert embedded within said bar of soap and registerable with said magnet for supporting and suspending said bar of soap within said hood;
said magnet being rearwardly and downwardly inclined in a plane at an acute angle in the range of 5 to 20 degrees, whereby the bar of soap is similarly inclined to facilitate drainage into said base;
said magnet having a flat under surface which is correspondingly inclined;
said hood including a depending front wall; and
a pair of upright parallel spacers mounted upon the interior of said front wall within said chamber and extending toward said back wall for spacing said bar of soap adjacent said back wall.

4,207,976
CIGARETTE PACKAGE

Rodney W. Herman, 1002 Glenhill Rd., Saint Paul, Minn. 55112

Filed Apr. 9, 1979, Ser. No. 28,562
Int. Cl.[2] B65D *25/10*
U.S. Cl. 206—246 14 Claims



1. An improved cigarette package for containing a plurality of elongated cigarettes, which comprises:
(a) a body;
(b) means contained in the body for holding the cigarettes in a generally upright position, in which the holding means includes a plurality of passageways for respectively encircling at least a portion of each cigarette for supporting that cigarette in a generally upright position;
(c) means located in each passageway for retaining the cigarette therein until it is removed from the package for smoking;
(d) wherein each passageway has an open end located on an exterior side of the package such that one cigarette butt may be inserted into a passageway through the open end thereof for retaining a number of cigarette butts in the package corresponding to the number of passageways; and
(e) wherein the body has a dispensing surface which includes a plurality of outlet openings encircling the upper end of the cigarettes therein; wherein each cigarette is normally contained in the body with its upper end being flushed with the dispensing surface and its lower end being contained in one of the passageways, and wherein the passageways and outlet openings are aligned so that a cigarette butt received in a passageway containing a cigarette will push the top end of the cigarette past the dispensing surface to render the cigarette accessible for manual removal.

4,207,977
APPLICATOR BRUSH PACKAGE

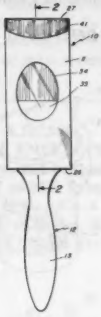
Jerome Kronfeld, Washington Crossing, Pa., and Garry Furst, West Newton, Mass., assignors to American Brush Company, Inc., Stoughton, Mass.

Filed Dec. 11, 1978, Ser. No. 968,381
Int. Cl.[2] B65D *83/10*
U.S. Cl. 206—361 6 Claims

1. A brush package casing for a brush having a plurality of bristles bound to a handle with an encircling band,
said band defining a rear stop edge,
said casing comprising a cardboard sheet folded into a generally rectangular shape having first and second opened

ends aligned with each other and defined by a top wall, opposed bottom wall and side walls,

at least one portion of said sheet being reversed on itself at said first end to form a casing stop edge,



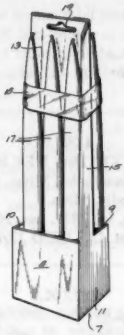
said top and bottom walls being spaced apart a predetermined distance so as to engage said band rear stop edge in face to face relationship with said casing stop edge when said brush is positioned in said casing with said handle extending beyond said first end and said bristles extending toward said second end.

4,207,978

DISPLAY PACKAGE FOR TAPERED CANDLES

Michael P. Patterson, Oshkosh, Wis., and William H. Perkins, Oxford, Ohio, assignors to Paragon Candles, Inc., Oshkosh, Wis.

Filed Mar. 5, 1979, Ser. No. 17,610
Int. Cl.[2] B65D *85/20, 5/20*
U.S. Cl. 206—443 **2 Claims**



1. A container formed from a single elongated blank of paperboard and adapted to hold and attractively display a group of candles or similar articles, comprising:

A. means defining an open topped rectangularly shaped box having upright opposite front and back walls, upright opposite end walls, and a flat bottom wall, said means comprising slits and scoring in the blank at one end thereof providing bottom wall forming flaps connected by said scoring to the lower edge of each end wall and to the lower edge of one of said front and back walls;

B. an upright partition wall rising above the open top of the box in a plane substantially equispaced from the front and back walls thereof;

C. a substantially narrow extension wall rising from each end wall as an upward continuation thereof, one of said extension walls projecting forwardly from scoring defining one edge of the partition wall and the other extension wall projecting rearwardly from scoring defining the opposite edge of the partition wall, whereby said extension walls provide support for the partition wall,

(1) said extension walls being of double thickness and the plys thereof being joined together by scoring which extends longitudinally of the blank and comprises continuations of the same scoring that defines the junction of the front wall with one end wall and the junction of the back wall with the opposite end wall,

(2) one ply of each of said narrow walls being integral with its respective end wall and the other plys thereof being separated from the walls of the box by slits which extend transversely of the blank and define upper edges of the box,

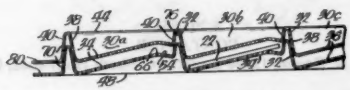
whereby said extension walls and the partition wall coact to define a pair of back to back vertical compartments that communicate with the open top of the box and have only a back wall and one side wall, so that candles set vertically into said box have the portions thereof that project above its open top received in said vertical compartments and thereby held neatly upright while being exposed to inspection.

4,207,979

TRAY FOR SORTING AND STORING PHOTOGRAPHIC TRANSPARENCY SLIDES

Donald J. Brown, Naperville, Ill., assignor to Knox Manufacturing Co., Wood Dale, Ill.

Filed Sep. 21, 1978, Ser. No. 944,772
Int. Cl.[2] B65D *21/02, 85/62, 1/36*
U.S. Cl. 206—456 **8 Claims**



1. An integrally formed overlay tray of light transmitting material for holding a plurality of photographic slides in side-by-side relationship and having base means lying in a common plane, said tray being formed with a series of spaced elongate first walls having upper and lower ends, the adjacent lower ends thereof each being joined together by an elongate second wall to define a series of longitudinal slide-receiving channels, each channel supporting a slide in a slightly upwardly inclined position in relation to said base means to afford substantially uniform illumination of each slide, said first walls being spaced apart a distance generally equal to the height of the slides, and each of said second walls defining a longitudinal groove adjacent one of said first walls so as to lie underneath an edge of a slide which may be reposing within the respective channel against the second wall, whereby pressure applied to the edge of the slide overlapping said groove moves the edge into the groove to pivot the slide and raise the opposite edge thereof from the bottom of the channel.

4,207,980

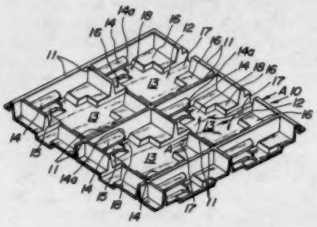
SLIDE FILE SHEET

Naokuni Namiki, Hoya, Japan, assignor to Slidex Corporation, Tokyo, Japan

Filed Feb. 22, 1979, Ser. No. 14,152
Claims priority, application Japan, Mar. 1, 1978, 53-24614[U]
Int. Cl.[2] B65D *1/36, 85/48*
U.S. Cl. 206—456 **11 Claims**

1. In a slide file sheet for arranging and holding a plurality of slide films, said file sheet including a plurality of rectangular recesses formed by a bottom wall cooperating with longitudinally and traversely extending bounding walls, and holding

lugs extending from side walls of said bounding walls inwardly of said rectangular recesses, the improvement comprising means for supporting lower surfaces of slide films positioned in said slide recesses, said supporting means having first portions for contacting and supporting portions of said slide films and second portions positioned beneath and spaced from said slide films and defining therewith spaces beneath lower surfaces of



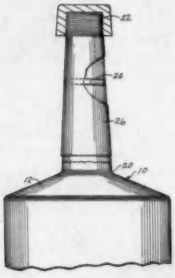
said slide films; first draft channels for establishing communication between spaces above upper surfaces of said slide films and the spaces beneath lower surfaces of the films; and second draft channels for establishing communication between said spaces beneath the lower surfaces of the films and punched openings extending through said bottom wall below said holding lugs when said slide films are held within said rectangular recesses.

4,207,981

CONTAINER

Johnson D. Karam, 12744 Bassett St., North Hollywood, Calif. 91605

Filed Apr. 19, 1979, Ser. No. 31,523
Int. Cl.[2] B65D *23/08*
U.S. Cl. 206—457 **10 Claims**



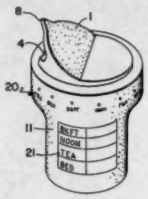
1. A container, the container having a liquid contained therein, such a container comprising:
(a) a hollow body portion;
(b) a neck portion having a first end and a second end, the first end attached to the hollow body portion, the second end remote from such a hollow body portion;
(c) means for closing such second end;
(d) a substantially transparent seal within such neck portion for preventing the liquid from being dispensed from the container; and
(e) means for substantially precluding visible detection of such a seal.

4,207,982

FLIP TOP CONTAINER

Donald J. Maxwell, and David J. Crisp, both of London, England, assignors to Sterling Drug Inc., New York, N.Y.

Filed May 3, 1979, Ser. No. 35,902
Claims priority, application United Kingdom, May 30, 1978, 24382/78
Int. Cl.[2] B65D *45/00, 83/04, 85/56*
U.S. Cl. 206—534 **24 Claims**



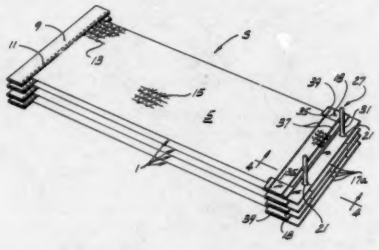
1. A closure for a container having an access opening therein, said closure comprising:
a collar surrounding said opening into said container;
a lid member rotatably mounted within said collar for rotation about an axis of rotation coaxial with the axial center of said collar, said lid member further being pivotable between open and closed positions about a pivotal axis normal to said axis of rotation, said lid member having an aperture therethrough which is accessible when said lid member is pivoted in the open position, whereby access into said container through said aperture is possible;
camming means between said lid member and said collar for controlling the pivoting and rotational movement of said lid member within said collar, said camming means being comprised of:
a saw-tooth cam surface around the inside surface of said collar;
a cam follower on said lid member movable along said cam surface, whereby pivoting said lid member causes said cam follower on said lid member to move across said cam surface, thereby rotating said lid member about said axis of rotation.

4,207,983

PACKETING NET BAGS

Eugene H. Wolske, Minnetonka, Minn., assignor to Bemis Company, Inc., Minneapolis, Minn.

Filed Dec. 14, 1977, Ser. No. 860,290
Int. Cl.[2] B65D *33/00*
U.S. Cl. 206—554 **28 Claims**



1. A bag made of net material having opposed walls, closed at its bottom and open at its mouth end, each wall having a mouth edge, one of the walls having a flap extending beyond its mouth edge and beyond the mouth edge of the other wall, said flap comprising a piece of sheet material secured to said

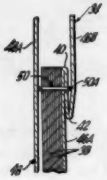
one wall of the bag and having a portion projecting beyond the mouth edge of said one wall, said projecting portion having a pair of holes spaced transversely of the bag for receiving fastening means, such as the legs of a wicket, for holding a plurality of the bags in a stack, the flap of each bag being adapted to be torn off said fastening means, and a second piece of sheet material secured to the other wall of the bag at its mouth edge, the projecting portion of said flap also projecting beyond the edge of said second piece of sheet material at the mouth of the bag.

4,207,984

DECORATIVE ENVELOPE PACKET

Robert E. Kelly, Mahopac, and Nathan Friedman, Hartsdale, both of N.Y., assignors to Mill Printing and Lithographing Corporation, Peekskill, N.Y.

Filed Nov. 30, 1978, Ser. No. 965,151
Int. Cl.[2] B65D *85/54*
U.S. Cl. 206—554 **6 Claims**



1. In a decorative envelope packet including a plurality of stacked envelopes secured to an elongated, decorative coverlayer and wherein each envelope has a pocket portion and a flap portion, the improvement wherein said elongated cover layer has first, second and third parallel fold lines to consecutively define a front panel portion, an upper back panel portion, an intermediate back panel portion, and a lower back panel portion, said elongated coverlayer being disposed about the flap portions of the stacked envelopes such that the front panel portion overlies one side of the stacked flap portions of the envelopes, while the upper and lower back panel portions are disposed on the opposite side of the stacked flap portions of the envelopes, and said intermediate back panel portion is disposed between said upper and lower back panel portions and wherein a wire staple extends through the flap portions of the envelopes, as well as through the lower back panel portion and the intermediate back panel portion and is secured for fixing said stacked envelopes to the elongated coverlayer, and with the upper back panel portion overlying said secured staple thereby preventing the staple from causing injury to the user of the decorative envelope packet.

4,207,985

SORTING APPARATUS

James F. Lockett; Thomas O. Mehrkam, and Richard R. M. Braham, all of Houston, Tex., assignors to Geosource, Inc., Houston, Tex.

Filed May 5, 1978, Ser. No. 903,057
Int. Cl.[2] B07C *5/342*
U.S. Cl. 209—564 **1 Claim**

1. An apparatus for sorting articles based upon the intensity of light reflected therefrom at a first and a second color wavelength, the apparatus including

(a) a viewer element adapted to view a viewed area through which an article to be sorted passes;

(b) an ejector element adapted to apply an ejecting force to eject an article from an ejection zone;

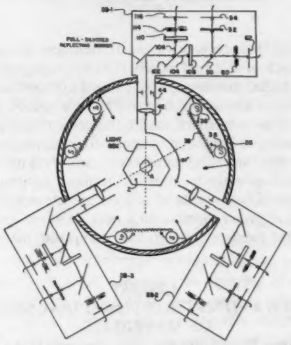
wherein the improvement comprises:

an electrical signal generator arrangement associated with the viewer and adapted to respond to light energy incident thereon to generate a first and a second electrical signal representation of the light energy reflected from the same portion of the article to be sorted as detected against a first and a second background, respectively, the first background having a reflectivity characteristic greater than the reflectivity characteristic of the second background;

a circuit arrangement responsive to the first and second electrical signals to generate a third electrical signal functionally related to the difference therebetween and representative of the portion of the viewed area occupied by an article being sorted, the circuit arrangement adapted to generate a fourth and a fifth electrical signal respectively representative of the reflectivity of the article at the first and second color wavelengths and functionally related to the first and second electrical signals as scaled by the third electrical signal;

an article-detect signal generator adapted to generate an electrical article-detect signal if the third signal representative of the portion of viewed area occupied by the article exceeds a predetermined reference signal;

an article classifier for classifying the article to be sorted on the basis of the intensity of light reflected from the article



at the first and second color wavelengths, the classifier including a memory element having a plurality of storage locations defining a matrix array therein, each memory location being addressable by a different combination of reflected light intensities at the first and second color wavelengths, each memory location having stored therein a classification signal representative of the acceptability of an article exhibiting the reflected light intensities at the first and second color wavelengths corresponding to the address of the memory storage location to electrically define in the matrix array the boundaries of an acceptability profile of the type article being sorted; and,

an ejector control arrangement responsive to the article-detect and article-classification signals for initiating the operation of the ejector to apply the ejecting force toward substantially the same predetermined portion functionally related to the length of each article being ejected from the ejection zone without regard to the presence of the predetermined physical characteristics on the portion of the article toward which the ejecting force is applied.

4,207,986

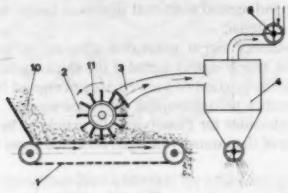
APPARATUS FOR SEPARATING PLASTIC FILM FROM PAPER PARTICULARLY ADAPTED FOR USE IN WASTE RECYCLING SYSTEMS

Manlio Cerroni, Via Bruxelles 53, Rome, Italy

Filed Jun. 1, 1978, Ser. No. 911,411
Claims priority, application Italy, Jun. 3, 1977, 49707 A/77; May 16, 1978, 49389 A/78
Int. Cl.[2] B07C *5/36*
U.S. Cl. 209—616 **7 Claims**

1. Apparatus for separating composite waste materials chiefly composed of plastic film and paper comprising means

for conveying said composite material in a substantially horizontal path along a given direction, and reel means having a plurality of radial members extending therefrom, said reel means operating to move said radial members through said composite material at a portion of said horizontal path, said radial members moving in the same direction in which said composite material is moving while being passed therethrough to thereby engage plastic film contained in said composite material and to separate said plastic film therefrom, said reel means comprising a plurality of individual reel members each having a plurality of radial members extending therefrom and



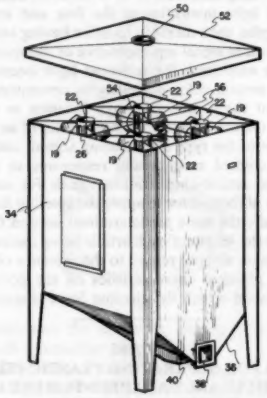
each moving their respective radial members through an endless path, each of said reel members being arranged to pass said respective radial members through said composite material at different points along said horizontal path spaced apart in the direction of movement of said composite material, said reel members being arranged in a mutually overlapping arrangement such that the radial members of each reel member, other than the reel member located furthermost upstream taken in the direction of movement of said composite material, deposit plastic film engaged thereon on a next adjacent upstream reel member after passage through said composite material.

4,207,987

APPARATUS AND METHOD FOR SPIRAL SEPARATION OF MATERIALS

L. S. Beckham, West Lafayette, Ind., assignor to Ag Machinery & Safety, Inc., West Lafayette, Ind.

Filed Mar. 10, 1978, Ser. No. 885,213
Int. Cl.[2] B07C *9/00*
U.S. Cl. 209—691 **25 Claims**



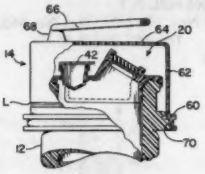
1. A spiral separator device, comprising:
an inlet for receiving material to be separated;
a plurality of spiral flights for separating material thereon into separate fractions;
a mounting tube having said spiral flights mounted thereon, said mounting tube including directing means within said tube for receiving material to be separated from said inlet and directing the same in substantially equal amounts to each of said spiral flights; and
first and second discharge outlets for discharing different ones of said fractions separated at said spiral flights.

4,207,988

CLOSURES FOR CONTAINERS

Myron R. Prouty, Oakland; Colin J. Nichols, Burlingame; Norman A. Brown, Oakland, and Stephen P. Sutter, Danville, all of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Filed May 18, 1979, Ser. No. 40,002
Int. Cl.[2] B65D *41/50*
U.S. Cl. 215—232 **18 Claims**



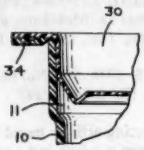
1. A tear-open closure for enclosing a neck having an opening on a container comprising a cap having a base, a side wall and a top wall, the base having means for sealing engagement with an annular projection on the neck of the container below the opening, score lines defining rupturable thinned sections in the cap, said score lines including a first score line commencing at an intermediate point on the top wall and extending across the top wall and down the side wall to meet a second score line, said second score line extending circumferentially all the way around the side wall, a third score line joining the point where the first score line commences and extending across the top wall generally contiguous with the first score line when extending down the side wall and diverging from the first score line to terminate a short distance from the first score line at an intermediate point on the side wall substantially above the second score line; and finger gripping means projecting from the top wall adapted for initiating rupture of said first and third score lines at the point where they meet.

4,207,989

CONTAINER WITH LID OPENING MEANS

Ole Ingemann, Svendborg, Denmark, assignor to A/S Haustrup Plastic, Langeskov, Denmark

Filed Nov. 7, 1978, Ser. No. 958,502
Claims priority, application Sweden, Nov. 17, 1977, 7712987
Int. Cl.[2] B65D *41/32*
U.S. Cl. 220—266 **5 Claims**



1. The combination of a container and lid in which the lid is removable from the container to open the latter and is replaceable to close the container, said container including a body having a mouth, said mouth including a strip of annular extent secured to said lid, said body of the container being provided with an annular weakening notch in the vicinity of said strip where the mouth of the container is secured to the lid, said container being separable at said notch to separate a part of

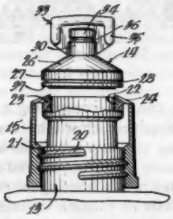
said container mouth and the lid together with said strip from said body, said notch being positioned radially inwards of said strip and upon rupture of the notch forming separating parts which can be reengaged upon replacement of the lid on said container, and locating surfaces on said lid and container for establishing a determined, oriented position of replacement of the lid on the body of the container.

4,207,990

HERMETICALLY SEALED CONTAINER WITH PLURAL ACCESS PORTS

Gerhard H. Weiler, South Barrington, and Louis T. Pagels, Hanover Park, both of Ill., assignors to Automatic Liquid Packaging, Inc., Arlington Heights, Ill.

Filed May 3, 1979, Ser. No. 35,626
Int. Cl.[2] B65D *41/32*
U.S. Cl. 220—267 **7 Claims**



1. A hermetically sealed container having a hollow body portion, a neck portion unitary with the body portion and defining a container access opening, and a closure means for said access opening but providing plural access ports, which closure means comprises:

a dome means over said access opening, defining a draining aperture and having a peripheral flange;

an upstanding hollow stem around said draining aperture and unitary with said dome means, said hollow stem being dimensioned to receive therewithin a draining spike;

a twist-off cap at the distal end of said hollow stem, connected thereto by a frangible web unitary with the cap and the stem, and covering the draining aperture; and

a severable annular web depending from said dome means, unitary therewith and with the distal end of the neck portion, and spaced inwardly from the periphery of the dome means.

4,207,991

CAN TOP OPENING MEANS

Arnaldo Amabili, 7680 Dollier St., St. Leonard, Quebec, Canada

Filed Mar. 19, 1979, Ser. No. 22,045
Int. Cl.[2] B65D *41/32*
U.S. Cl. 220—269 **18 Claims**

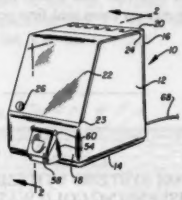
1. A closure system comprising an end wall, a line of weakening within said end wall defining a removable panel, a tab member overlying a portion of said end wall and said removable panel, said tab member being secured to said end wall proximate one extremity thereof, a finger-engaging portion at an opposed extremity of said tab member, said tab being secured to said removable panel proximate said line of weakening, whereby a lifting movement of the finger-engaging portion will cause said tab member to function as a second class lever and start a tear initiation along said line of weakening of said panel to permit removal of said panel.

4,207,992

TIMED MEDICINE DISPENSER

John H. Brown, 6333 Kalani, Dallas, Tex. 75240

Filed May 26, 1978, Ser. No. 909,628
Int. Cl.[2] B65B *59/00*
U.S. Cl. 221—15 **14 Claims**



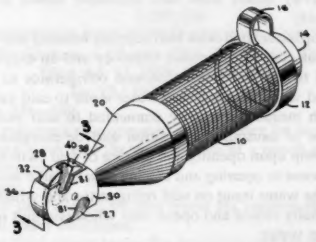
1. A medication dispensing device for dispensing medication at timed intervals over a predetermined period of time, comprising: a cabinet; a hopper supported within said cabinet; a shaft rotatably supported in said cabinet; a dispensing wheel rotatably supported by said shaft having a plurality of compartments with each compartment having an opening on the outer edge of the wheel; means to rotate said shaft one revolution per the predetermined period of time; a driven gear for rotating said dispensing wheel positioned around said shaft; a driving gear secured to said shaft having teeth spaced about its periphery by intervals sufficient for the opening of each compartment to be registered with an opening into the hopper at each timed interval; a transfer gear rotatably secured in said cabinet, a portion of the transfer gear positioned to engage said driven gear and another portion of the transfer gear positioned to engage the teeth of the driving gear at the timed intervals which rotates said dispensing wheel and register a compartment with the hopper and thereby dispense medication at the timed intervals over the predetermined period of time.

4,207,993

CRICKET DISPENSER

Doyce F. Ellis, Sr. deceased, late of Oglethorpe, Ga., By Ira N. J. Ellig, Administrator, P.O. Box 371, Oglethorpe, Ga. 31068

Filed Mar. 23, 1978, Ser. No. 889,542
Int. Cl.[2] A01K *97/04*
U.S. Cl. 221—256 **12 Claims**



1. A cricket dispenser comprising a container means capable of housing a plurality of live crickets, a movable transfer member comprising a rotary disc adjacent said container means, said rotary disc including a surface defining an open recess

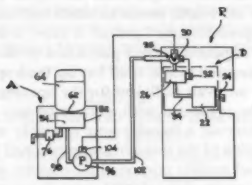
opening extending inwardly from a peripheral edge portion of said rotary disc and oriented along a chord of said disc spaced from the diameter of said disc and being of sufficient size to receive and hold a cricket, transfer member support means supporting said rotary disc for movement between a first position in which said recess opening communicates with the interior of said container to permit a cricket in said container to enter said recess opening head first and a second position in which said recess opening faces outwardly externally of said container to position the tail and rear legs of a cricket in said recess toward a user to permit the tail and legs of the cricket to be accessible to the user externally of said container and shroud means positioned to cover said recess opening while said rotary disc is being moved from said first position to said second position.

4,207,994

REFRIGERATOR SYSTEMS UTILIZING ASSEMBLIES TO ENABLE DISPENSING COLD WATER OR ICE MADE FROM PURIFIED WATER

James E. Offlee, Sr., 4506 Don Pablo Pl., Los Angeles, Calif. 90008

Filed Feb. 2, 1979, Ser. No. 8,956
Int. Cl.[2] B67D *5/62*
U.S. Cl. 222—146 R **28 Claims**



1. An assembly for use with a refrigerator having a unit capable of dispensing cold water or ice and a water input operatively leading into said unit and a valve in said input, said assembly comprising:

(a) a support housing;

(b) container means to provide a source of purified water operatively supported by said support housing;

(c) a water chamber associated with said support housing to receive water from said container means;

(d) water transfer means disposed between the container means and the water chamber to allow the water to flow by gravity action from said container means into said chamber;

(e) a pump associated with said support housing and having an input connected to said chamber and an output connected to the water input on said refrigerator to supply purified water through said water input to said unit;

(f) switch means electrically connected to said pump and capable of causing energization and de-energization of said pump upon opening and closing of said switch means in response to opening and closing of said valve associated with the water input on said refrigerator and which valve is normally closed and opens only when said unit requires makeup water;

(g) a separate cooling means in said support housing and being connected to said water chamber to receive purified water therefrom; and

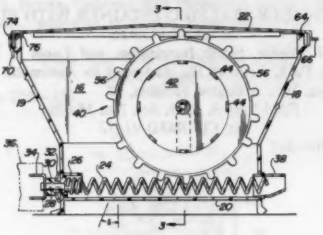
(h) a spigot on said support housing and being manually operable to permit dispensing of cooled purified water delivered from said cooling means.

4,207,995

DISPENSING CANISTER WITH COOPERATING SCREW AND AGITATOR

Raymond J. Neely, Montgomeryville, Pa., assignor to Refreshment Machinery Incorporated, Warminster, Pa.

Filed Jan. 9, 1978, Ser. No. 868,161
Int. Cl.[2] G01F *11/00*
U.S. Cl. 222—231 **9 Claims**



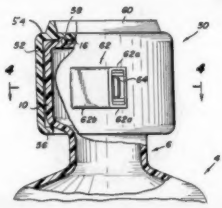
1. A dispensing canister comprising a housing having an access opening selectively closed by a cover, said housing having a dispensing outlet, a rotatable screw means in said housing for dispensing granular material through said outlet, an agitator supported in said housing for rotation about an axis transverse to the axis of rotation of said screw means, said agitator having teeth on an outer peripheral surface therof, some of said teeth being meshed with flights of said screw means, said teeth having a side face angled with respect to the axis of rotation of said agitator and matching the helix of the screw means so as to develop line contact therewith, said agitator being supported by oppositely disposed walls on said housing, said agitator having an axle at its axis of rotation, means for rotatably supporting said axle in any only one proper operative disposition within said housing, said support means including male and female structure cooperating with mating structure on the ends of said axle, said housing and agitator being made from a polymeric plastic material, the oppositely disposed walls of said housing which supports said agitator being sufficiently flexible so that they may be spread apart to facilitate insertion and removal of said agitator.

4,207,996

CONTAINER INCLUDING A HINGED FLAP VALVE ASSEMBLY

George A. Moen, 827 W. 26th Ave., Anchorage, Ak. 99503

Filed Jan. 5, 1979, Ser. No. 1,393
Int. Cl.[2] B67D *3/00*
U.S. Cl. 222—507 **5 Claims**



1. A synthetic plastic dispensing assembly for a container, comprising

(a) a vertically arranged synthetic plastic container member, including:

(1) a hollow container body portion;

(2) a generally tubular reduced neck portion connected with the upper end of said body portion; and

(3) an enlarged head portion connected with the upper end of said neck portion, said head portion including a generally tubular side wall, a generally disk-shaped top wall connected across the upper end of said side wall, and an annular ledge connecting the bottom of the side wall with said neck portion, said head portion further containing a pouring opening in said side wall, an integral flexible pouring spout extending from said opening, integral hinged flap means operable between open and closed positions relative to said pouring opening, and spring means biasing said hinged flap means toward said open position; and

(b) a synthetic plastic closure member rotatably mounted on said enlarged head portion, said closure member including

(1) a generally tubular sleeve portion located concentrically about and adjacent said side wall portion;

(2) a generally disk-shaped top wall portion connected across the upper end of said sleeve portion and parallel with and adjacent said head portion top wall;

(3) an internal annular bead located on the lower end of said sleeve portion, said bead being arranged for snap-fit engagement with said annular ledge to hold said closure member securely on said enlarged head portion; and

(4) an integral stationary pouring spout located on said closure member sleeve portion, said pouring spout containing a pouring opening;

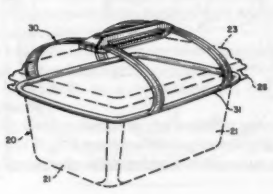
(c) said closure member being rotatable between a closed position in which the hinged flap means is maintained by said sleeve portion in a closed position to maintain said container member pouring spout in a reversely folded closed condition, and an open position in which the hinged flap means is biased by the spring means toward an open position in which the container member pouring spout is unfolded to an open condition and extends with the hinged flap means into said closure member pouring spout.

4,207,997

HANDLED CARRIER FOR CONTAINERS

Jack V. Croyle, Woonsocket, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Aug. 25, 1977, Ser. No. 827,646
Int. Cl.[2] B65D *71/00*
U.S. Cl. 224—55 **12 Claims**



1. A tote kit for containing items and for storing and carrying said items, said tote kit comprising:

(a) a container having substantially upright side walls, a bottom, and an open top; and closure member detachably engageable therewith;

(b) a peripheral flange extending outward from said container and having an under surface;

(c) an endless member encircling said container and restrained from upward movement by the under surface of said peripheral flange;

(d) first flexible strap means extending from said endless member and having an end;

(e) second flexible strap means extending from said endless member and opposed to said first flexible strap means and having an end;

(f) first and second connection means carried proximate the ends of said respective first and second flexible strap means; and

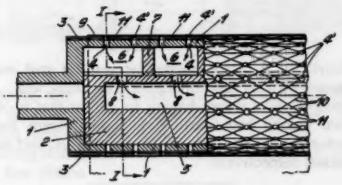
(g) first and second connection receiving means carried by but spaced from the ends of said first and second flexible strap means and positioned juxtaposed said respective first and second connection means so as to be detachably engageable with said first and second connection means.

4,207,998

VACUUM ROLLER

Walter Schmid, Stadel, Switzerland, assignor to Bachofen & Meier, Maschinenfabrik, Bulach, Switzerland

Continuation-in-part of Ser. No. 797,643, May 16, 1977, abandoned. This application Oct. 17, 1978, Ser. No. 952,225
Int. Cl.[2] B65H *17/28*
U.S. Cl. 226—95 **9 Claims**



1. A rotatable vacuum roller assembly adaptable for non-slip feeding of sheet material such as paper, carton, foil and the like, said roller assembly comprising:

a rotatable, cylindrically shaped hollow roller body for supporting and feeding said sheet material;

a cylindrically-shaped shell of resiliently deformable material for enclosing said roller body, said resilient shell having an inner surface engaging an outer surface of said roller body for joint rotation of said shell and roller body about an axis extending longitudinally through said roller body;

vacuum transfer means for transmitting suction force from a vacuum source to an outer surface of said roller assembly;

a deformable slit means extending through an outer surface of said resilient shell into fluid communication with said vacuum transfer means;

said slit means including opposite slit wall portions in abutting contact with one another, with said wall portions being separable a variable distance responsive to tension generated by contact with a specific sheet material to provide a suction force across the shell surface to draw said sheet material into non-slip contact with said rotatable roller assembly.

4,207,999

STOCK FEEDER FOR PUNCH PRESSES AND THE LIKE

Albert W. Scribner, 6 Country Club Rd., Darien, Conn. 06820

Filed Jul. 27, 1978, Ser. No. 928,546
Int. Cl.[2] B65H *17/36, 17/44*
U.S. Cl. 226—150 **6 Claims**

1. A pneumatically operated stock feeder for intermittently advancing stock into the work station of a punch press or the like: comprising

a frame;

a feed slide carried by said frame for reciprocation in feed and index directions;

a first fluid motor means for actuating said feed slide;

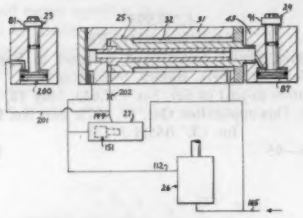
stock gripping means carried by said feed slide and being movable between stock gripping and release positions;

a second fluid motor means for actuating said stock gripping means;

a stock clamping means carried by said frame and being movable between stock clamping and release positions;

a third fluid motor means for actuating said stock clamping means;

a main valve means adapted to be shifted between at least two operative conditions and having an output that is coupled to both said third and first fluid motor means for causing actuation of said stock clamping means and said feed slide respectively;



a fourth fluid motor means for shifting said main valve means between said operative conditions; and

a control valve means having an output that is coupled to said second and fourth fluid motor means for causing actuation of said stock gripping means and said main valve means respectively.

4,208,000

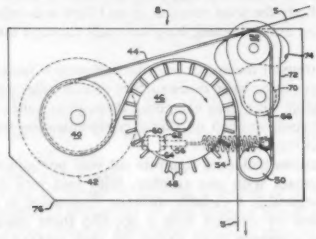
APPARATUS FOR ADVANCING STRAND MATERIAL

Warren W. Drummond, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 821,687, Aug. 4, 1977, abandoned. This application Mar. 29, 1978, Ser. No. 891,565

Int. Cl.[2] **B65H** *51/02, 51/14;* **C03B** *37/00*

U.S. Cl. 226—171 **7 Claims**



1. An attenuator for advancing strand material from a supply of strand to a fabrication or collection zone comprising an endless belt entrained around spaced rollers in a loose condition, means to positively rotate one of said rollers to provide the driving force for said endless belt on the inside surface of said belt, a wheel mounted for free rotation and engaging the outside surface of the endless belt in a position between said rollers whereby said endless belt makes a partial wrap about said wheel for attenuating and/or advancing strand located between the wheel and the outside surface of the endless belt.

4,208,001

ULTRASONIC METAL WELDING APPARATUS

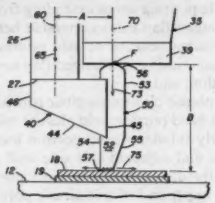
John G. Martner, St. Charles, Ill., assignor to Dukane Corporation, St. Charles, Ill.

Filed Jan. 5, 1979, Ser. No. 1,292

Int. Cl.[2] **B23K** *21/02*

U.S. Cl. 228—1 R **19 Claims**

1. Apparatus for vibratory welding of metal workpieces along contacting surfaces thereof, said apparatus comprising vibrating means spaced from the associated workpieces for transmitting sonic vibrations along a first axis generally normal to the contacting surfaces of the workpieces, coupling means removably coupled to the transmitting means and extending therefrom transversely of the first axis and spaced from the associated workpieces, said coupling means including a workpiece-engaging portion extending therefrom along a second axis spaced from and generally parallel to the first axis for contacting of the associated workpieces, and force-applying



means independent of the sonic vibrations and coupled to said coupling means for cooperation therewith to apply a static force through said workpiece-engaging portion to the associated workpieces along said axis, vibration of said coupling means by the transmitting means along the first axis effecting vibration of said workpiece-engaging portion of said coupling means and the associated workpieces in a direction generally parallel to the contacting surfaces of the workpieces for welding them together.

4,208,002

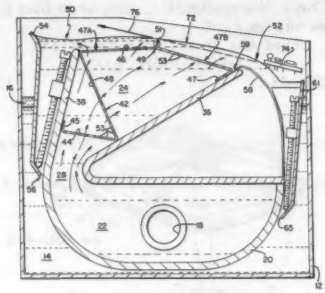
WAVE SOLDERING SYSTEM

Matthias F. Comerford, New Highlands, Mass.; Thomas N. Munroe, Hudson, and Harold T. O'Rourke, Milford, both of N.H., assignors to Hollis Engineering, Inc., Nashua, N.H.

Filed Aug. 18, 1978, Ser. No. 934,803

Int. Cl.[2] **B23K** *3/06*

U.S. Cl. 228—37 **22 Claims**



1. In a wave soldering apparatus comprising a reservoir for holding a supply of molten solder, a sump and nozzle adapted to be partially submerged in said supply of molten solder, said sump having a front wall, a rear wall, and a pair of side walls connecting said front and rear walls to define said nozzle, and means for introducing molten solder under pressure into the lower end of said sump whereby said solder may then flow upwardly in said sump to overflow said front and rear walls and thereafter return to said reservoir, the improvement wherein said sump and nozzle comprises an upwardly extending open-ended chamber of increasing plan area which terminates in a discharge opening of relatively large cross-sectional area at the upper end of said chamber, and including a generally Z-shaped perforated baffle positioned within said upwardly extending open-ended chamber, said perforated baffle

including an upper section which is bowed slightly upwardly beyond said front and rear walls.

4,208,003

METHOD OF JOINING SHAFT SECTIONS

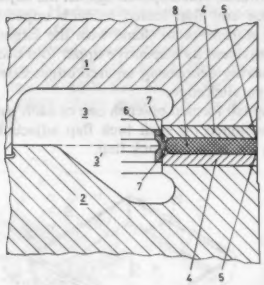
Pierre Meylan, Neuenhof, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Sep. 6, 1978, Ser. No. 939,956

Claims priority, application Switzerland, Sep. 6, 1977, 10837/77

Int. Cl.² B23K *31/02*

U.S. Cl. 228—169 **7 Claims**



1. A method of joining together rotary shafts of two separate machine units, said shafts providing an operative connection between the two machine units, at least one of the shafts being supported by a bearing adjacent the joint, said method comprising the steps of:

mounting a shaft within each of two separate machine units;

supporting at least one of the shafts adjacent a shaft end with a bearing;

welding a built-up portion on the end of each shaft;

annealing the shafts;

forming a welding groove in the built-up portion of the shafts;

transporting the machine units including the shafts to an assembly site;

placing a welding ring onto the end of said shaft of one machine unit;

positioning the other machine unit adjacent the first unit with the respective shafts in alignment and in engagement with the welding ring;

heating the shafts to a predetermined temperature to prevent damage to the bearing;

rotating the shafts at a predetermined peripheral linear speed; and

depositing weld material in the welding groove to join the shafts and form a machine having an integral rotary power shaft operatively connecting two machine units.

4,208,004

METHOD FOR MAKING AUGERS

Jeffrey R. Yago, Barboursville, W. Va., assignor to Jess Estep, Ridgeview, W. Va.

Continuation of Ser. No. 740,008, Nov. 8, 1976, Pat. No. 4,140,264. This application Jan. 31, 1979, Ser. No. 8,089

Int. Cl.² B23K *31/02*

U.S. Cl. 228—173 D **4 Claims**

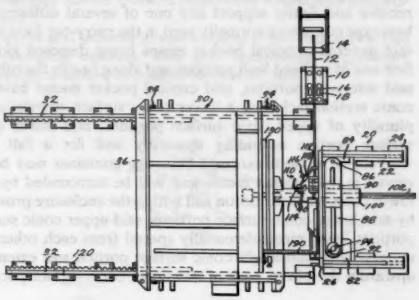
3. A method of adding a second spiral ribbon to an auger the steps of:

(a) locating and securing an auger comprising a pipe and a spiral ribbon secured to said pipe on a support;

(b) placing and securing the leading edge of an incoming ribbon in contact with an outside wall of the first spiral ribbon;

(c) rotating said pipe support and simultaneously moving said pipe support in a direction perpendicular to said incoming second ribbon while;

(d) creating pressure on said incoming second ribbon so as to form the second ribbon into a spiral around said first spiral ribbon;



(e) rotating said pipe support and simultaneously moving said pipe support in a direction perpendicular to said second incoming ribbon; and

(f) securing said spiral second ribbon to the outside edge of said first ribbon.

4,208,005

METHOD FOR MOUNTING PARTS ON CIRCUIT BOARDS

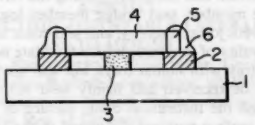
Kazuo Nate, Machida; Kyoko Kotsuka, and Tokio Isogai, both of Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 6, 1979, Ser. No. 10,026

Claims priority, application Japan, Feb. 8, 1978, 53-12400

Int. Cl.² H05K *3/34*

U.S. Cl. 228—175 **11 Claims**



1. A method for mounting one or more parts having terminals on a circuit board which comprises coating an ultraviolet-curing and thermosetting resin composition on the circuit board by screen printing with a prescribed pattern except for wiring portions of the circuit board, mounting the parts on the printed resin composition, curing the resin composition by simultaneous irradiation of ultraviolet light and heat rays so as to bond the parts to the circuit board, and soldering the terminals of the parts onto the wiring of the circuit board.

4,208,006

MOLDED PULP TRAY FOR BEVERAGE AND FOOD

Kenneth D. Bixler, Huntington; Robert E. Ralphs, Katonah, both of N.Y.; Henry A. Lord, So. Portland, Me., and Richard F. Reifers, New Canaan, Conn., assignors to Diamond International Corporation, New York, N.Y.

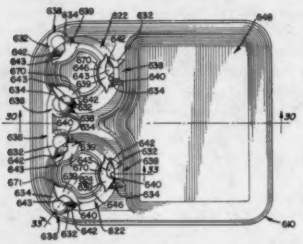
Filed Mar. 27, 1979, Ser. No. 15,694

Int. Cl.² B65D *3/24, 1/00*

U.S. Cl. 229—2.5 R **38 Claims**

1. A tray for carry-out food and beverage of molded pulp or

like material defined by an upper ridge having first and second end wall portions and first and second side wall portions extending downwardly therefrom at a slight inclination inwardly toward the interior of said tray whereby said tray may be readily stacked in nested relationship with similar trays, said tray comprising generally conical pocket means adapted to receive and firmly support any one of several different size beverage containers normally used in the carry-out food trade, said generally conical pocket means being disposed along a first one of said end wall portions and along one or the other of said side wall portions, said conical pocket means having a conic section including a lower conic surface portion and a plurality of upper conic surface portions, said lower conic surface portion extending upwardly and for a full 360° whereby in some instances a beverage container may be received in said pocket means and will be surrounded by said lower conic surface portion and within the enclosure provided by said lower conic surface portions, said upper conic surface portions being circumferentially spaced from each other and integral with said lower conic surface portion and extending upwardly therefrom, each of said upper conic surface portions



having circumferentially spaced inwardly extending radial webs integral therewith on opposite sides thereof, said radial webs extending inwardly of said pocket means from the respective upper conic surface portion and upwardly above said ridge, a generally horizontal bridge member extending from one of said radial webs to the next web circumferentially spaced therefrom and integrally joining the two webs to form a tower-like member, said bridge member together with the two radial webs joined thereby, and said conic section defining one of a plurality of apertures which facilitate nesting relationship of said tray with similar trays, but will not permit passage of a cup to be received and firmly held within said pocket means beyond the theoretical conic surface of the upper and lower conic surface portions if lowered to the level of the area of said apertures, each of said bridge members having a circumferentially extending radially inner edge adapted to brace the side wall of a beverage container intermediate the upper and lower ends thereof, and the radial web portions of each of said towerlike members presenting radial inner edges of which at least one is adapted to firmly brace the side wall of a beverage container.

4,208,007

PAPERBOARD TRAY

Robert A. Bamburg; Farris N. Duncan, both of West Monroe, and Roger M. Floyd, Monroe, all of La., assignors to Olinkraft, Inc., West Monroe, La.

Filed Sep. 13, 1976, Ser. No. 722,486
Int. Cl.[2] B65D *5/24*
U.S. Cl. 229—31 R **3 Claims**

1. A tray formed from a blank of foldable corrugated paperboard material into a leakproof construction comprising

a tray bottom with two sides and two ends,

an unbroken planar surface side panel attached to each side of the tray bottom,

an unbroken planar surface end panel attached to each end of the tray bottom,

said side panels and said end panels having outer edges disposed in a common plane,

an upper fold band joined to each outer edge of each end panel,

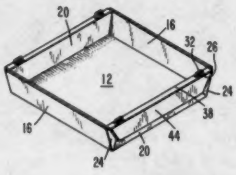
each upper fold band being disposed generally transverse to its respective end panel and having a pair of tab holes formed therein in spaced relation to each other,

a pair of tuck flaps joining each of said side panels to each of said end panels and extending from said tray bottom to adjacent portions of the outer edges of said side panels and said end panels,

each pair of tuck flaps being joined together by a scoreline and each pair of tuck flaps being foldable together along said scoreline and disposed against the adjacent end panel,

an exterior end flap joined to each upper fold band and having a trapezoidal shape with the larger of its parallel edges adjacent its respective upper fold band, and with its sides having decreasing tapered edges extending from its larger parallel edge,

a tuck flap tab formed on each one of each pair of tuck flaps and positioned on such tuck flap adjacent the scoreline joining the adjacent tuck flap,



each tuck flap tab extending from its tuck flap to beyond the outer edges of said side panels and said end panels,

a lower fold band joined to the smaller parallel edge of said exterior end flap,

an end locking flap joined to said lower fold band and having an intermediate scoreline parallel to said smaller parallel edge,

each upper fold band being foldable over the adjacent folded pairs of tuck flaps,

each folded pair of tuck flap tabs protruding through its respective tab hole to retain the tray in an assembled leak-proof construction,

each exterior end flap being disposed in spaced parallel relation to its respective end panel,

each lower fold band being folded substantially transverse to its respective exterior end flap,

each end locking flap being folded substantially transverse to its respective lower fold band so as to be in spaced parallel relation to its respective exterior end flap, and

each end locking flap being bent along its scoreline to facilitate flexing thereof as it is tucked under the respective folded pairs of tuck flaps whereby rigidity of the assembled tray is enhanced.

4,208,008

PACING GENERATOR PROGRAMMING APPARATUS INCLUDING ERROR DETECTING MEANS

Bobby L. Smith, Cedar, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Nov. 6, 1978, Ser. No. 958,063
Int. Cl.[2] G06F *11/00*
U.S. Cl. 371—15 **5 Claims**

1. Apparatus for programming a pacing generator with parameters and modes of operation to control the generator's stimulating pulse, said apparatus comprising:

(a) keyboard means for receiving the parameters and/or modes of operation by operator manipulation;

(b) display means;

(c) control means including memory means for storing a

desired sequence of steps in which a particular parameter or mode of operation is to be programmed by said programmer and for causing said display means to display messages directing the operator to enter in said desired sequence the parameter and/or mode of operation via said keyboard means; and

(d) error detecting means responsive to the depressing of an incorrect key of said keyboard means for causing said control means to return to a designated step of said control processes.

4,208,009

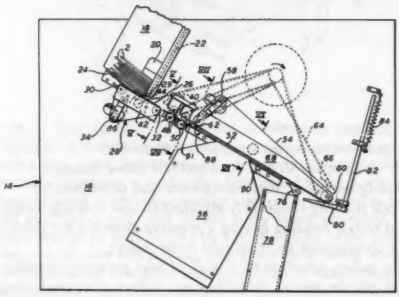
DOCUMENT READING SYSTEM

Carl O. Markkanen, Hasbrouck Heights; William G. Benson, West Orange, both of N.J., and Amnon Goldstein, Manhasset, N.Y., assignors to Sweda International, Inc., Paramus, N.J.

Continuation of Ser. No. 647,467, Jan. 8, 1976. This application Jan. 30, 1978, Ser. No. 873,647

Int. Cl.[2] G06K *13/16*; B65H *3/12*; B07C *3/14*

U.S. Cl. 235—475 **15 Claims**



1. A system for handling documents, said documents comprising documents which have marked thereon machine readable data relating to articles to which said documents have been attached and from which they have been detached, said system comprising:

a feed path along which said documents are to be fed;

means for feeding said documents along said feed path;

said feeding means comprising belt means providing a movable feeding surface;

means for moving said belt means;

means for maintaining said documents in face-to-face driven contact with said feeding surface of said belt means so that said documents are fed along said feed path by said movable feeding surface;

said feeding surface of said belt means being substantially flat; and

means located along and below said feed path for reading said machine readable data from documents overlying said reading means and moving along said feed path;

said feeding means overlying said feed path for feeding said documents underlying said feeding means along said feed path and past said reading means.

4,208,010

VENTILATOR ASSEMBLY

Dennis A. Beam, Jr., Westfield Rd., and Paul M. Sarazen, Jr., 214 Fairway Dr., both of Shelby, N.C. 28150

Filed Jul. 14, 1978, Ser. No. 924,501

Int. Cl.[2] F24F *7/00, 13/14*

U.S. Cl. 236—49 **6 Claims**

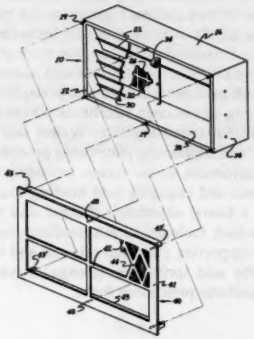
1. An improved ventilator assembly comprising:

(a) a housing, said housing defining a ventilating opening therewithin;

(b) at least one shutter element rotatably received within said housing and being moveable from a closed position in which the ventilating opening is substantially closed to an open position;

(c) temperature responsive means associated with said at least one shutter element to automatically adjust said at least one shutter element responsive to ambient temperature;

(d) a first grill secured to said housing at one end, across said ventilating opening, said grill comprising a gridwork having a screen associated therewith; and



(e) a second grill associated with said housing on an end of same opposite said first grill, whereby said ventilator assembly is generally protected from insects from both sides, said second grill comprising a frame having a gridwork thereacross and a screen secured to said grid, said frame having projecting means extending across the top and bottom of the frame with short vertical sections at each end to define flange corners, and said flanges being mateably receivable within said housing whereby said second grill is removably secured to said assembly to provide access to the inside of said housing.

4,208,011

RAIL CONNECTION ADJUSTABLE LATERALLY AND AS TO HEIGHT

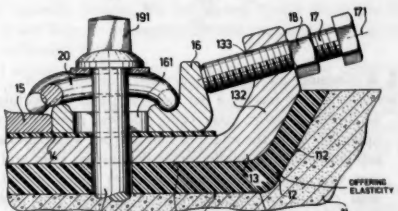
Peter Dahlhaus, Radevormwald; Willi Simon, Gevelsberg, and Wilhelm Striepeke, Bochum-Langendreer, all of Fed. Rep. of Germany, assignors to Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Apr. 19, 1978, Ser. No. 897,857

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1977, 2717394

Int. Cl.[2] E01B *9/66*

U.S. Cl. 238—281 **4 Claims**



1. In combination with a roadbed having a recess transverse thereto, a resilient rail connection adjustable both laterally and also as to height, which includes: a supporting plate for supporting the rails of a railway track, said supporting plate being aligned with and at least partly resting in said recess, an elastic

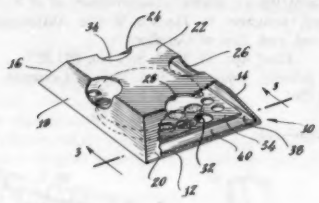
layer cast between said roadbed and said supporting plate, said supporting plate being provided with laterally upwardly extending flanges, said supporting plate and said elastic layer being provided with a substantially vertical bore, holding block means arranged above and supported by said supporting plate and provided with an oblong hole axially aligned with said bore and extending transverse to the railway track of which the rails have to be connected to the roadbed, said holding block means being adapted to engage the foot portion of a rail of a railway track, spring means partially resting on said holding block means for engagement with the foot portion of said last mentioned rail, said spring means being provided with a passage axially aligned with said bore, tie screw means anchored in said roadbed and extending through said passage and said oblong hole and said bore of said supporting plate as well as through said bore of said elastic layer for clamping down said spring means onto said block means and clamping the latter and said supporting plate against said elastic layer, said flanges of said supporting plate being provided with transverse bores, adjustable screw means extending through said transverse bores and engaging said holding block means for also effecting a lateral adjustment thereof, and height adjustment means which includes an intermediate plate interposed between said supporting plate and said rail and holding block means, whereby said spring means engages said rail with a substantially uniform preloading force.

4,208,012

AIR FRESHENER CARTON

Daniel P. Dutcher, Woodbury, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Jun. 9, 1978, Ser. No. 914,033
Int. Cl.[2] A61L 9/01
U.S. Cl. 239—57 **7 Claims**



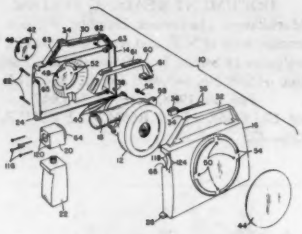
1. A container and air freshener insert combination:
an outer carton having a bottom wall panel supporting the air freshener insert, converging side wall panels extending upwardly from the edges of said bottom wall panel and a top wall panel of smaller outer dimensions than said bottom wall panel connecting the upper edges of said side wall panels, said carton having at least one opening through a panel other than the bottom wall panel; and
a perforated retaining panel interposed between the upper surface of the insert and the top wall panel of the carton, the outer dimensions of the retaining panel being greater than the outer dimensions of the top wall panel to limit displacement of the retaining panel and insert even if the carton is inverted.

4,208,013

PORTABLE CHEMICAL SPRAYING APPARATUS WITH DISPOSABLE CHEMICAL CONTAINER

Bobby W. Coleman; John R. Frassanito; Richard O. Norman, and James G. Parke, all of San Antonio, Tex., assignors to Micro-Gen Equipment Corporation, San Antonio, Tex.

Filed Mar. 7, 1977, Ser. No. 774,785
Int. Cl.[2] B05B 7/30
U.S. Cl. 239—351 **14 Claims**



1. A portable spraying apparatus comprising:
an air compressor driven by a suitable drive means;
a housing enclosing said compressor and drive means;
a nozzle housing removably attached to said housing means, said nozzle housing having a pressure chamber for receiving compressed air from said compressor;
nozzle means attached to a wall of said pressure chamber, said nozzle means including an orifice communicating between said pressure chamber and a mixing chamber of said nozzle means, said orifice creating a vacuum in a first conduit extending from said mixing chamber to a first half of a mating means outside said pressure chamber;
a container adapted for holding liquid chemical therein, a second half of said mating means mounted on and communicating with said container for sealing with said first half of said mating means upon said container being connected to said housing means;
said liquid chemicals being drawn through said mating means and mixed in said mixing chamber with air from said compressor and subsequently discharged to atmosphere;
said mating means comprising a male portion and a female portion;
said container and said housing having mating extensions and indentations for attaching said container to said housing and for urging said container upward;
said first half of said mating means is said male portion, and said second half of said mating means is said female portion for sealably receiving said male portion;
a seal over a container opening, said seal being a paper-like seal for ease of rupture by said male portion, said container having a flexible structure therein with a funnel shaped opening for sealably receiving said male portion, said funnel shaped opening connecting through second conduit to the bottom of said container for drawing chemical therethrough; and
said male portion is secured in position on an underside of said pressure chamber, said male portion having liquid seal means therearound to prevent said chemical from leaving said container but allowing air through said liquid seal means, said flexible structure having a vent passage therethrough to keep said container at approximately atmospheric pressure.

4,208,014

FUEL INJECTOR FOR INTERNAL COMBUSTION ENGINES

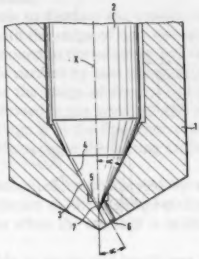
Eckart Müller, Schwabach, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Filed Oct. 12, 1978, Ser. No. 950,584

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 2746010

Int. Cl.[2] F02M *61/04*

U.S. Cl. 239—533.4 **2 Claims**



1. A fuel injector for internal combustion engines, which includes: a nozzle body having a valve bore with a conical valve seat, a nozzle needle having a needle tip and being reciprocably arranged in said valve bore and having a seating surface adapted to sealingly engage said valve seat and to be lifted off said valve seat, said nozzle body being provided with at least one spray hole having its axis define an acute angle with the axis of said valve bore, said spray hole being entered by said needle tip when the seating surface of said nozzle needle engages said valve seat, said tip of said nozzle needle being so shaped and entering said spray hole in such a way that the free cross-sectional area at the spray hole in nearly all positions in which said nozzle needle is lifted off said valve seat is less than the respective free cross-sectional area at said valve seat.

4,208,015

METHOD OF REGENERATION OF PLASTICS MATERIAL BY REMOVING OUTER DETERIORATED LAYER

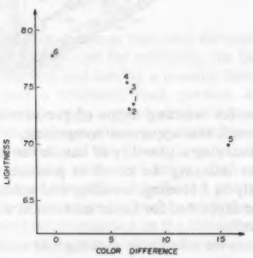
Masanao Fujita, Tokyo; Toshiaki Sugawara, Kaihei, and Keizo Oosaki, Musashino, all of Japan, assignors to Kabushiki Kaisha Meiji Gomu Kasei, Tokyo, Japan

Filed Oct. 6, 1978, Ser. No. 949,112

Claims priority, application Japan, Oct. 12, 1977, 52-122041

Int. Cl.[2] B02C *23/36*

U.S. Cl. 241—16 **8 Claims**



1. A method of regenerating plastic material of a higher quality from a scrapped plastic material bearing a deteriorated surface layer, comprising the steps of:

comminuting said scrap plastic material to form a plurality of plastic particles having a size in the range of from about 5 to about 40 mm;

agitating said plastic materials at high speed in the presence of an aqueous medium and a plurality of solid particles having a higher hardness than said plastic particles;

continuing said agitating operation until said deterioration layer has been removed from said plastic particles; and

separating the plastic particles from said removed deterioration layer and said solid particles.

4,208,016

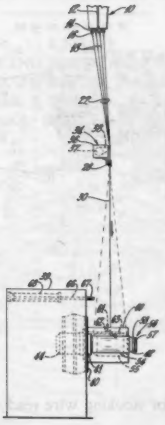
METHOD AND APPARATUS FOR COLLECTING STRAND

Bernard H. Jones; Daniel Cox, and Don R. Gallagher, all of Anderson, S.C., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 29, 1976, Ser. No. 671,194

Int. Cl.[2] B65H *54/02, 67/04, 75/28*

U.S. Cl. 242—18 G **6 Claims**



1. The method of collecting continuous glass strand into wound packages including the steps of:

(a) rotating a first collet having a package collection region and a temporary collection region;

(b) winding the glass strand on the collection region of the first collet;

(c) rotating a second collet having a package collection region and a temporary collection region, the temporary collection region adapted with bands of material and a member;

(d) laterally moving the advancing strand along the first collet from its package collection region to its temporary collection region;

(e) contacting the strand advancing to the first collet with the second rotating collet in the temporary collection region to entangle the strand with the bands of material, to engage the strand on the member and to begin collection of the strand in the temporary collection region of the second collet; and

(f) laterally moving the strand along the second collet from the temporary collection region to the collection region to begin package formation.

3. Apparatus for the collection of strand into wound packages comprising:

(a) a rotatable collet having a circumferential groove with a member extending therein and with bands of material extending along a portion thereof; and

(b) means for moving the strand to the circumferential

groove to engage the strand with the member and to entangle the strand with the bands of material.

4,208,017

APPARATUS FOR TEMPORARY STOCK DISPENSER OF WIRE

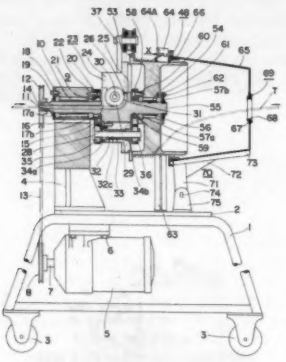
Hiroshi Ichikawa, and Masatake Yakura, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 858,379, Dec. 7, 1977, abandoned. This application Feb. 26, 1979, Ser. No. 14,819

Claims priority, application Japan, Jan. 31, 1977, 52/008692

Int. Cl.[2] B65H *51/20*

U.S. Cl. 242—47.01 **8 Claims**



1. An apparatus for stocking wire ready for use at a work place comprising:

(a) a support body;

(b) a rotating member means carried by said support body;

(c) a drive means for rotatably driving said rotating member means;

(d) a wire storage drum coaxially mounted to said rotating member means, said wire storage drum including a tapered portion and a generally cylindrical portion, said tapered portion having a larger diameter than, and decreasing in diameter towards, said generally cylindrical portion, said tapered portion including a flange at a position remote from said generally cylindrical portion;

(e) a wire guide passage means for supplying wire to said rotating member means, said rotating member means winding said wire on said wire storage drum tapered portion; and

(f) a press member means supported by said rotating member, an edge of said press member means cooperating with said flange to form a gap smaller than the diameter of the wire, said press member means having a tapered surface, said tapered surface being positioned in registry with said drum tapered portion, said press member means tapered surface and drum tapered portion cooperating to squeeze said wire, whereby a length of wire previously wound around said wire storage drum is displaced by pressure exerted by a following length of wire in the direction of said generally cylindrical portion, the difference in the diameters of said tapered and cylindrical drum portions in cooperation with said press member means resulting in loosely wrapped wire on said cylindrical drum portion.

4,208,018

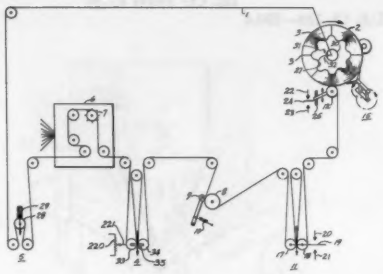
METHOD AND APPARATUS FOR WINDING AN ENDLESS TAPE

John N. Wilkinson, Bradbury, Calif., assignor to Optical Radiation Corporation, Azusa, Calif.

Filed Nov. 27, 1978, Ser. No. 963,981

Int. Cl.[2] B65H *17/48*

U.S. Cl. 242—55.19 R **17 Claims**



1. A tape-handling unit comprising a turntable rotatable about an axis, means for holding a tape on edge against the turntable along a plurality of radii of the turntable and permitting movement of the tape radially along each radius while preventing circumferential movement of the tape across the radius, and means for agitating the tape about each radii to aid in the formation of scallops between adjacent radii of the holding means.

4,208,019

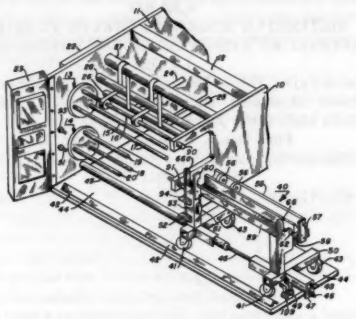
TURRET WINDER FOR PRESSURE-SENSITIVE TAPE

John F. Dusenbery, Montclair, N.J., assignor to John Dusenbery Co., Inc., Randolph, N.J.

Filed Aug. 10, 1978, Ser. No. 932,440

Int. Cl.[2] B65H *19/26, 19/30*

U.S. Cl. 242—56 A **3 Claims**



1. Apparatus for winding strips of pressure-sensitive tape into rolls on cores, said apparatus comprising,

(a) a turret carrying a plurality of cantilever mandrels,

(b) means for indexing the turret to position the mandrels successively in a loading, winding and unloading station,

(c) a carriage supported for linear movement with respect to the mandrels,

(d) drive means for selectively moving said carriage between an initial position spaced from the free ends of the mandrels and an operative position wherein the forward end of the carriage is proximate to the turret,

(e) a core box carried by the carriage and arranged to support a plurality of spaced cores in axial alignment with

each other and the mandrel which is positioned in the loading station, said cores being slidably inserted onto such mandrel upon movement of said carriage from the initial to the operative position,

(f) means carried by said carriage and operable to lower the core box relative to the axis of the mandrel which is in the loading station,

(g) a transfer bar for applying tension to the strips of tape, said transfer bar being carried by said carriage and disposed between the mandrels which are positioned in the winding and unloading station when the carriage is in the operative position,

(h) means operable to displace the transfer bar laterally into engagement with the strips of tape extending between the mandrels positioned in the winding and unloading station,

(i) a cutting knife carried by said carriage and disposed in a position to cut the strips of tape extending between the mandrels positioned in the winding and unloading station when the carriage is in the operative position,

(j) means operable to cause the cutting knife to cut the strips of tape,

(k) a pivotally-mounted brush carried by the carriage and disposed proximate to the mandrel positioned in the unloading station when the carriage is in the operative position,

(l) means operable to move said brush into contact with the outer convolutions of the tape rolls carried by the mandrel positioned in the unloading station,

(m) a stripper arm carried by said carriage, and

(n) actuating means for moving the stripper arm into position to strip wound rolls of tape from the mandrel in the unloading station upon movement of the carriage from the operative to the initial position.

4,208,020

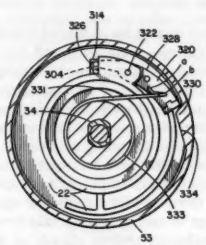
SELF-CENTERING BAIL FOR FISHING REEL

Richard L. Gifford, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Aug. 11, 1978, Ser. No. 932,847

Int. Cl.[2] A01K *89/01*

U.S. Cl. 242—84.2 G **15 Claims**



1. In an open face spinning reel used for casting a bait attached to a fishing line and for retrieving the bait and fishing line after casting, the reel having a housing having a forward face portion and a rearward back portion, a center shaft mounted in the housing, a spool mounted on the shaft for holding the fishing line, a pinion gear assembly rotatably journaled near the center and the forward portion of the housing, the assembly coaxial with the center shaft and having a threaded portion at one end, a handle and gear train assembly mounted on the housing and operable with the pinion assembly, a cup shaped rotor mounted on the threaded portion of the pinion assembly and rotatable in both the clockwise and counterclockwise directions by cooperative movement of the handle and gear train and pinion assembly, and a movable bail mounted on the rotor having an open casting position and a closed retrieving position, preselectedly stopped counterclockwise rotation of the rotor provides a self-centering rotor position for repeatedly opening the bail to the same casting position, an improved self-centering bail mechanism comprising:

(a) an arm slidably mounted in the housing and having a forward end and a rearward end, the forward end adjacent the forward face portion of the housing;

(b) first means for moving the rearward end from a back position to a forward position,

(c) second means for biasing the rearward end of the arm in the back position,

(d) a pawl pivotally mounted on the forward face of the housing, the pawl having an open position and a closed position,

(e) the cup shaped rotor having a recessed portion and an inwardly projecting tooth on the recessed portion, the recessed portion covering the forward face portion of the housing;

(f) third means for moving the pawl to the open position stopping the counterclockwise rotation of the rotor when the pawl contacts the tooth placing the rotor in the self-centering position whereby the bail may be opened.

4,208,021

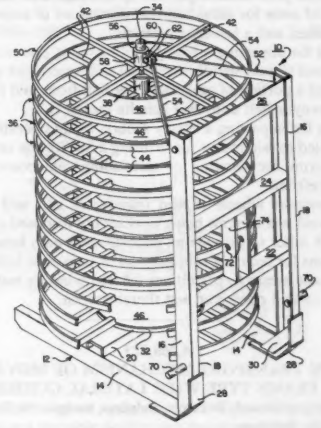
FENCING WIRE DISPENSER

John R. Wall, R.F.D. #5, Box 122, Waynesburg, Pa. 15370

Filed Oct. 2, 1978, Ser. No. 947,434

Int. Cl.[2] B65H *17/46, 75/30*

U.S. Cl. 242—86.5 R **6 Claims**



1. Mobile apparatus for dispensing fencing wire comprising:

a frame;

means associated with said frame for facilitating its transport;

a single upstanding shaft mounted on said frame;

a plurality of rotatable spools, each having a strand of wire coiled thereon, supported for rotation on said shaft and adapted to simultaneously unreel said wire strands; and

wire guide means associated with each of said spools and spaced radially outward therefrom for maintaining said wire strands in vertically spaced relationship as they are unreeled.

4,208,022

TWIN REEL BELTWINDER

John T. Wimberly, 609 Hadfield St., Marion, Ill. 62959

Filed Jul. 5, 1978, Ser. No. 922,062

Int. Cl.[2] B65H *75/40;* B65G *23/02*

U.S. Cl. 242—86.52 **7 Claims**

1. A twin reel beltwinder apparatus for use in supporting an

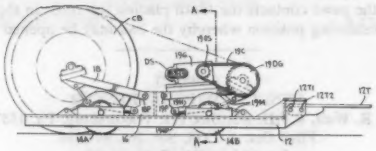
indeterminate length of conveyor belt for transportation within a mine cavity comprising:

a framework mounted on support wheels, said framework including a front end and a rear end;

a first set of arms pivotally mounted at one end to a central portion of said framework and extending rearwardly therefrom, said first set of arms including means at the other end thereof for securing a full reel of conveyor belt;

a second set of arms pivotally mounted at one end to said central portion of said framework and extending forwardly therefrom, said second set of arms including spindle means at the other end thereof unto which a portion of the conveyor belt is positioned to reduce the overall height of said full reel of conveyor belt initially positioned on said first set of arms;

a first jack means operatively connected to said first set of arms for actuating said first set of arms between a raised and a lowered position;



a second jack means operatively connected to said second set of arms for actuating said second set of arms between a raised and a lowered position;

means for imparting a rotary motion being operatively connected to said spindle means on said second set of arms to wind a portion of said conveyor belt from said full reel of conveyor belt unto said spindle means;

means for imparting a rotary motion being operatively connected to said means for securing a full reel on said first set of arms for winding or unwinding said conveyor belt therefrom;

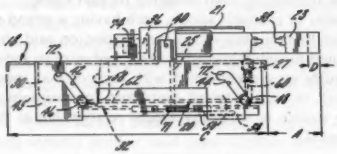
said support wheels of said framework and said first and second sets of arms being operatively disposed relative to each other to provide an unobstructed path between said means for securing said full reel of conveyor belt and said spindle means to permit uninhibited winding and unwinding of said conveyor belt therebetween.

4,208,023

TAPE TRANSPORT MECHANISM OF MOVABLE FRAME TYPE WITH LATERAL GUIDES

Jean-Baptiste Demol, Brussels, Belgium, assignor to Staar, S.A., Brussels, Belgium

Filed Jun. 2, 1978, Ser. No. 912,060
Int. Cl.[2] G11B *23/10, 15/30*
U.S. Cl. 242—198 **10 Claims**



1. In a tape transport mechanism for tapes stored in cassettes, said mechanism being of the type having a fixed frame with lateral sides, and a movable frame carrying tape and reel drive elements, supported between said sides of said fixed frame for translation of said tape and reel drive elements together with and substantially perpendicular to the cassette to penetrate and leave the cassette in the course of the in-and-out movement of the cassette in its own plane between unloaded and loaded positions, the improvements comprising:

means for supporting said movable frame including guide slots inclined more than 45° and less than about 75° to the plane of cassette movement formed in said lateral sides of said fixed frame, and support members extending from the opposite sides of said movable frame and movable in said guide slots; and

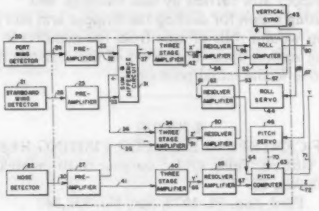
lateral guide plates movable parallel to said plane responsive to the movement of the cassette to its loaded position, said guide plates having driving edges inclined in the opposite direction to said guide slots at an angle of 87° or less relative to said plane of cassette movement, and means on said movable frame engaged by said driving edges for moving said support members along said guide slots and said movable frame to translate said tape and reel drive elements to penetrate the cassette.

4,208,024

CONTROL APPARATUS

Joseph E. Killpatrick, Minneapolis, Minn., and Ralph D. Ormsby, Ann Arbor, Mich., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 11, 1961, Ser. No. 82,123
Int. Cl.[2] F41G *7/00*
U.S. Cl. 244—3.15 **16 Claims**



13. In a control system by means of which a dirigible craft may be controlled, means on said craft for detecting electric fields through which said craft may be moving and for producing three signals indicative of orthogonal components of the electric field detected thereby; first and second computing networks each comprising input means and output means; and means connecting said detecting and signal producing means to said networks so the first and second of said signals are applied to the input means of one of said networks and so that the second and third of said signals are applied to the input means of the other of said networks, said networks being characterized by producing output signals at the output means thereof indicative of the product of magnitude of the smaller of the signals applied thereto and a trigonometric function of the phase angle between the signals applied thereto.

4,208,025

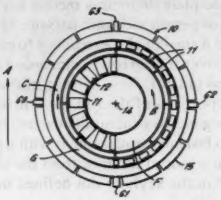
ROTARY WING AIRCRAFT

Raymond Jefferson, 71 Stirtingale Rd., Bath BA2 2NG, Somerset, England

Filed Sep. 11, 1978, Ser. No. 941,802
Int. Cl.[2] B64C *29/00*
U.S. Cl. 244—12.2 **8 Claims**

1. A rotary wing aircraft including a generally planar annular frame supporting radially inner and outer sets of aerofoil blades, said sets each being disposed to form an annulus and being supported on said frame for rotation in opposite directions about a common axis, first and second sets of panels movably mounted on said frame, the first and second sets of panels being selectively movable to cover the inner and outer

sets of airfoil blades during only the advancing portions of their paths of travel to prevent transonic airflow over the sets



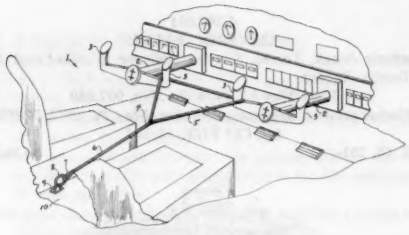
of blades in the advancing portions of their paths of travel during high speed flight.

4,208,026

AIRPLANE LOCK FOR CONTROL SURFACES

Arthur T. Reynolds, 610 Crystal Dr., Pittsburgh, Pa. 15228

Filed Jul. 12, 1978, Ser. No. 923,788
Int. Cl.[2] B64C *13/14*
U.S. Cl. 244—224 **1 Claim**



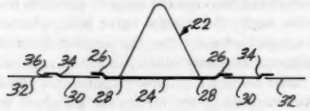
1. In an aircraft having a pair of control wheels, side by side, each having two vertically upwardly extending control arms to enable the pilot and co-pilot to control the movements of the ailerons and horizontal stabilizer, wherein the improvement comprises a loop of flexible, non metallic cord looped snugly about the adjacent vertically upwardly extending control arms of both control wheels, and means anchored rearwardly and centrally between said control wheels comprising a piece of cord attached to said loop and fastened at the other end rearwardly of the aircraft floor between the seating positions of the pilot and co-pilot for pulling said loop sufficiently tightly rearwardly so as to raise the horizontal stabilizer and prevent it from moving, whereby movements of both the ailerons and horizontal stabilzer are yieldably arrested.

4,208,027

GRADATION OF SKIN THICKNESS ON METAL-CLAD AIRSHIP HULLS

Vladimir H. Pavlecka, Newport Beach, Calif., assignor to Airships International, Inc., Tustin, Calif.

Filed Aug. 9, 1978, Ser. No. 932,223
Int. Cl.[2] B64B *1/14*
U.S. Cl. 244—126 **5 Claims**



1. An apparatus for joining rigid transverse and longitudinal structural framing and reinforcing members of a metal clad airship hull, said hull having a rigid skin portion located intermediate said framing and reinforcing members, the framing and reinforcing members having a base portion of a pre-determined thickness greater than the skin portion, said apparatus comprising

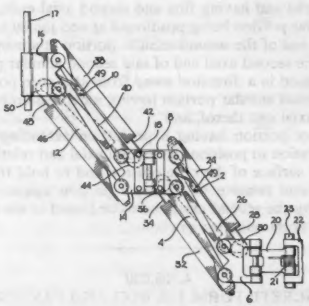
at least one intermediate section of rigid hull material of a pre-determined thickness secured between the base portion of the framing and reinforcing members and the rigid skin portion, the thickness of the intermediate section being such that it is intermediate the thickness of the framing and reinforcing members base portion and that of the rigid skin portion whereby deformation or discontinuity in the curvature of the airship hull due to changes in pressurization is prevented.

4,208,028

SUPPORT APPARATUS

Garrett Brown, 508 Pine St., Philadelphia, Pa. 19106, and Arnold O. DiGuilio, Sherman Oaks, Calif., assignors to Garrett Brown, Philadelphia, Pa.

Continuation-in-part of Ser. No. 506,326, Sep. 16, 1974, Pat. No. 4,017,168. This application Jun. 28, 1976, Ser. No. 700,544
Int. Cl.[2] G03B *17/00*
U.S. Cl. 224—185 **59 Claims**



1. A weight support apparatus system especially adapted for operation as a portable device on a moving carrier and capable of being hand-guided by an operator, the system being of improved stability against angular deviations in pan, tilt and roll, and substantially free-floating in a manner to also isolate the weight from unwanted lateral and vertical movement caused by the motion of the carrier which comprises;

weight support means connected to and adapted to support at least part of the weight, which means is adapted to be connected to the carrier,

said support means substantially freeing the operator's hands from the weight, isolating and free-floating the weight at a distance from the operator substantially independently of any of his unwanted lateral and vertical motions and capable of being guided to a position in space and in a range of positions selected by the operator;

said support means comprising at least a pair of first and second interconnected equipoising parallelogram linkage support arms, said support arms being adapted to damp out vibrations due to movement of the carrier; and

pivotal and rotatable means interconnecting the support arms to permit rotatable and pivotable movement of one arm relative to the other.

4,208,029

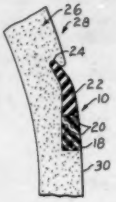
CORE APPARATUS

Robert W. Untz, Hanna City, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 788,860, Apr. 19, 1977, abandoned. This application Jun. 23, 1978, Ser. No. 918,629

Int. Cl.[2] B22C *7/00*; B29C *3/00*

U.S. Cl. 249—183 **2 Claims**



1. An annular core comprising:

a core portion formed of sand and binder and having an outer surface;

an annular member having a side surface and being integrally positioned within said core portion, said side surface and said outer surface of said core portion being positioned relative to one another to define a smooth and continuous outer surface of said core, said annular member including an inextensible first annular portion and a second annular portion constructed from an elastomer material and having first and second axial ends, said first annular portion being positioned at and joined to the first axial end of the second annular portion in a manner causing the second axial end of said second annular portion to be biased in a direction away from said core portion;

said second annular portion having a depression in the second axial end therof; and

said core portion having a projection extending into the depression to position the second axial end relative to the outer surface of the core portion and to hold the second axial end relative to the core portion against the bias causing the second axial end to be biased in the direction away from said core portion.

4,208,030

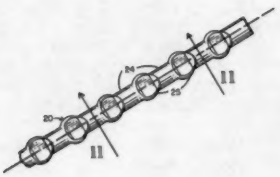
CONCRETE FORM TIE ROD AND FASTENER

Thomas W. Wilson, E. 35 Euclid Ave., Spokane, Wash. 99207

Filed Jun. 15, 1978, Ser. No. 915,820

Int. Cl.[2] E04G *17/08*

U.S. Cl. 249—217 **5 Claims**



1. A headless concrete form tie rod and reusable fastener structure comprising, in combination:

a lineally elongate tie rod formed by plural spaced alternating similar cylindrical body portions and protuberances, each with an extension less than the body portion in one dimension and greater than the body portion in a substantially perpendicular dimension, all body portions and protuberances having substantially the same cross-sectional area; and

a fastener structure contacting the tie rod at two spaced points, each of which carries part of a force parallel to the tie rod and fastener comprising first fastening means comprising a base plate defining a medial keyhole slot with a larger hole to permit elongate passage of a tie rod therethrough and a smaller slot extending from the larger hole to nicely fit over the narrower dimension of the protuberance portions but not allow passage of the adjacent cylindrical body portions of the rod therethrough; and

second fastening means structurally carried by the base plate to come into fastening engagement with a protuberance of the tie rod at a spaced distance from the tie rod protuberance carried in the keyhole slot defined in the base plate.

4,208,031

CONTROL VALVE

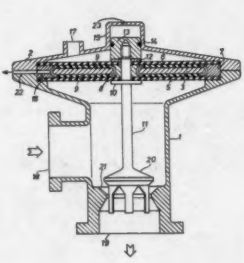
Vladimir Jonak, Tumba, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed May 17, 1978, Ser. No. 907,060

Claims priority, application Sweden, May 20, 1977, 7705951

Int. Cl.[2] F16K *31/145*

U.S. Cl. 251—61.2 **4 Claims**



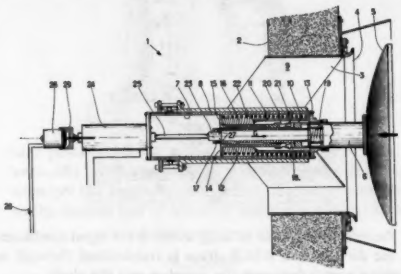
1. A control valve comprising a valve housing, a membrane wall sealingly clamped in said housing and forming therewith two separate chambers adapted to be subjected to different pressures, respectively, the housing having a valve seat in one of said chambers, and a valve body coacting with said seat and secured to the central portion of the membrane wall to follow movements of said wall axially thereof, the membrane wall including two separate membrane members, one on each side of said wall facing a corresponding one of said chambers, and a plurality of stiff support elements located between said membrane members, said support elements being movable relative to each other and each having one end pivotally connected to the valve housing and the opposite end pivotally connected to the valve body, whereby axial loads on the membrane members are transferred through the support elements to said housing and valve body, the control valve being characterized in that each support element has the general form of a circle sector, said sector elements, when in a common plane, coacting with each other to form a generally continuous planar circular support disc supporting the membrane members across substantially their entire surfaces, said support disc being axially flexible into a slightly conical form in which the radially inner portions of the sector elements have a greater spacing from each other than when in said common plane.

4,208,032

CLOSING DEVICE WITH VALVE HAVING A HIGH SPEED REACTION

Andre Mineur, Marly, France, assignor to Mineur-Becourt SA, Marly les Valenciennes, France

Filed Nov. 21, 1977, Ser. No. 853,176
Claims priority, application France, Nov. 18, 1977, 76 35589
Int. Cl.[2] F16K *31/44, 35/00*
U.S. Cl. 251—69 **6 Claims**



1. A high speed closing device, comprising;
a frame defining an opening;
a valve which longitudinally closes upon said frame;
a housing secured to said frame within said opening;
a hollow external piston, integral with said valve and slidable within the housing;
a first spring located between the external piston and the housing for applying a closing force to the external piston to close the valve;
a coaxial sleeve surrounding a first rod, said first rod slidable within the coaxial sleeve,
and coupling lock means connected to the first rod for selectively coupling the first rod to the external piston when the rod is in a first position;
means for connecting the external piston to the coupling lock means;
first means for moving the first rod to the first position, wherein the coupling lock means is locked;
jack means for moving the coaxial sleeve and the first rod so as to compress the first spring and move the external piston to open the valve when the rod is in the first position;
and second means for moving the first rod to a second position for uncoupling the coupling lock means from the external piston to thereby allow rapid closing of the valve by the first spring.

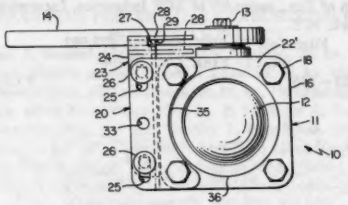
4,208,033

LOCKING DEVICE FOR A BALL VALVE

James E. Kesterman, Cincinnati, Ohio, assignor to Dover Corporation, New York, N.Y.

Filed Jul. 24, 1978, Ser. No. 927,060
Int. Cl.[2] F16K *35/00*
U.S. Cl. 251—90 **28 Claims**

1. In combination, a valve housing, a valve element mounted in said valve housing and movable between an open position and a closed position, movable means connected to said valve element to move said valve element between its open and closed positions, locking means supported solely by said valve housing, and said locking means including means mounted for movement between a single position in which said mounted means of said locking means can prevent movement of said movable means from either its position when said valve element is in its open position or from its position when said valve element is in its closed position to selectively lock said movable means in the position in which said valve element is in its open position and in the position in which said valve element is in its closed position and a position in which said mounted means of



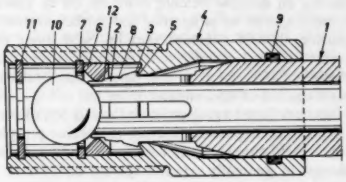
said locking means cannot prevent movement of said movable means.

4,208,034

QUICK-COUPLING ASSEMBLY FOR FLUID CONDUITS

Weimar Ohlsson, Surte, Sweden

Filed May 24, 1978, Ser. No. 909,053
Claims priority, application Sweden, May 25, 1977, 7706096; May 10, 1978, 7805297
Int. Cl.[2] F16K *37/28*
U.S. Cl. 251—149.1 **8 Claims**



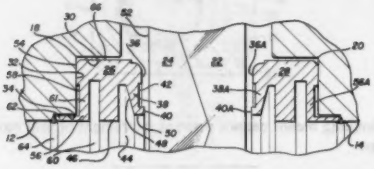
1. A quick-coupling assembly for connecting a pair of conduits in fluid communication, said assembly comprising a first sleeve-like coupling member, means at one end of said first coupling member for connection to one of the conduits, a second sleeve-like coupling member for receiving said first coupling member therein, means at one end of said second coupling member for connection to the other of said conduits, said first coupling member being formed with a plurality of axially extending resilient tongues at the end thereof remote from said one end, each tongue having an outwardly extending projection and an external surface portion tapered inwardly from said projection towards a free end of the tongue, said second coupling member having an internal inwardly extending locking shoulder for engaging behind said projections of said tongues when said first coupling member is received in said second coupling member in a locked first position of the assembly, said second coupling member further comprising an internal ring between said shoulder and said one end of the second coupling member, said ring having limited axial displacement from said shoulder towards said one end, said ring resiliently compressing said tongues upon movement of the first locking member axially inwardly of the second coupling member from said first position to a second position, and means for retaining said ring on said tongues during outward movement of said first coupling member from said second position to a third position in which the ring engages said locking shoulder whereby said projections of the tongues compressed by said ring can be moved to a position outwardly of said locking shoulder thus permitting further outward movement of the first coupling member from the second coupling member.

4,208,035

METAL GATE VALVE SEAT HAVING A FLEXIBLE FRONT LIP FACE SEAL

Patricio D. Alvarez, Rosenberg, and Manmohan S. Kalsi, Houston, both of Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Feb. 13, 1978, Ser. No. 877,592
Int. Cl.[2] F16K *3/02, 39/04*
U.S. Cl. 251—196 9 Claims



9. In a valve having a valve body defining a valve chamber and a fluid passageway communicating with the valve chamber, an annular seat pocket around said passageway facing the valve chamber, and a valve member mounted in said valve chamber movable between open and closed positions, an improved one-piece metal seat member mounted in said pocket, said seat member comprising:

(a) an annular body having a front face adjacent the valve member and an opposed back face with an inner peripheral surface extending between the faces, said front face having an annular flexible front lip on an inner portion thereof and an outer annular seal surface around an outer portion thereof adjacent said lip, said inner peripheral surface of said annular body having an annular groove therein which opens to the passageway and defines the back surface of said annular front lip;

(b) said back face having an inner flexible back lip extending from an inner portion thereof, said inner peripheral surface of said annular body having a second annular groove therein in generally parallel spaced relation to said first annular groove, said second annular groove opening to the passageway and defining a front surface of the flexible back lip.

4,208,036

WINCH

Richard D. J. Huggett, Horndean, and William Cook, Cowplain, both of England, assignors to Lewmar Marine Limited, Hampshire, England

Filed Jul. 26, 1978, Ser. No. 928,159
Claims priority, application United Kingdom, Jul. 27, 1977, 31611/77
Int. Cl.[2] B66D *1/30*
U.S. Cl. 254—150 R 10 Claims

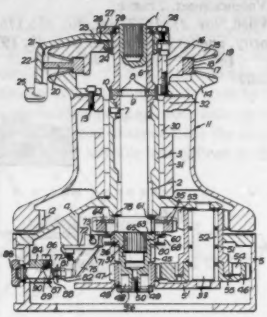
1. A manually powered winch comprising:

a winch drum rotatable about a central axis;

a drive input;

a plurality of drive trains of respectively different drive ratios between the drive input and the winch drum; and

means for causing successive driving engagement of drive trains of successively differing mechanical advantage upon successive reversals of direction of rotation of the drive input to drive the drum in one direction of rotation, said means including a first shaft, a member of said drive train being mounted on the shaft to be axially movable thereon, uni-directional drive means engageable between the member and the shaft and means for biasing the member away from a first axial position toward a second axial position, the member transmitting drive between the drive input and the winch drum, and selector means for moving the member axially from the second axial position to the first axial position, in one of said axial positions the uni-directional drive means being engageable between the member and the shaft and in the other of the said axial positions the uni-directional drive means being disengaged between the member and the shaft, retention of the member in the said one of the axial positions being assured by



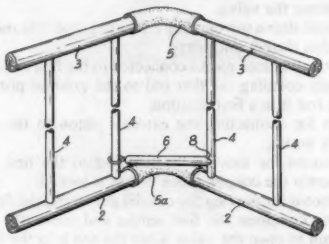
the drive means for so long as the drive input continues in the direction in which drive is transmitted through said drive means between the member and the shaft.

4,208,037

PLAYPEN

André A. Le Gal, La Rive 47110, Ste Livrade sur Lot, France

Filed Jan. 15, 1979, Ser. No. 3,779
Claims priority, application France, Jan. 17, 1978, 78 01168
Int. Cl.[2] E04H *17/18*
U.S. Cl. 256—25 11 Claims



1. A folding playpen comprising: at least three rigid panels, each panel comprising an upper and a lower horizontal bar connected by a plurality of vertical bars; a flexible deformable element flexibly connecting the upper and lower horizontal bars of each panel with the upper and lower horizontal bars of adjacent panels, and cross members provided for locking each set of two adjacent panels in position with respect to each other when arranged to span an angle between the two adjacent panels and supported at each end by a vertical bar.

4,208,038

SIMPLIFIED ASSEMBLY OF RAIL FENCE

James E. Reid, 5440 E. Dahlia, Scottsdale, Ariz. 85254

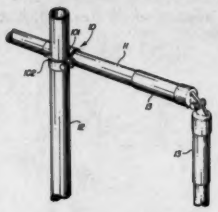
Filed Jan. 22, 1979, Ser. No. 5,208
Int. Cl.[2] E04H *17/00*
U.S. Cl. 256—65 1 Claim

1. In a fence including rails and posts, improved means for simplifying the construction and the disassembly of said fence, said means comprising:

(a) means, engaging said posts, which posts lie in one plane, and slidably receiving and supporting said rails in another plane parallel to said one plane

(b) caps slidably rotatably mounted on the terminal ends of said rails, and

(c) means for adjustably pivotally connecting juxtaposed portions of at least two of said caps mounted on adjacent ends of rails converging on an identical point in between



said posts such that said caps may be horizontally and vertically positioned in relation to each other, and continuous rail line generally conforming to ground contour and to the desired line of travel of said fence may be formed.

4,208,039

DEVICE FOR DIVIDING A STRAND INTO SLABS

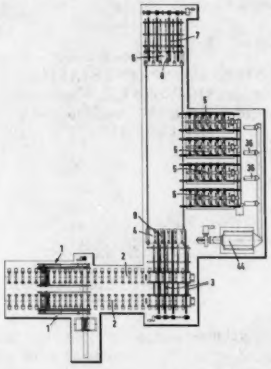
Erich Höffken, Dinslaken; Werner Kleine-Kleffmann; Rolf Bertram, both of Duisburg; Karl-Heinz Abele, Dinslaken, and Günter Michalski, Kamp-Lintfort, all of Fed. Rep. of Germany, assignors to Thyssen Aktiengesellschaft vormals August Thyssen-Hütte, Duisberg, Fed. Rep. of Germany

Filed Mar. 9, 1978, Ser. No. 884,788

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1977, 2710564; Mar. 11, 1977, 2710574

Int. Cl.² B22D *11/126*

U.S. Cl. 266—50 **9 Claims**



1. A device for cutting a continuously cast strand into slabs and said slabs into individual lengths of a desired width comprising a cut-off unit with a run-out roller table provided for said slabs as utilized in continuous casting plants for cutting said continuously cast strand into successive slabs, at least one transport means for moving said slabs transversely and selectively to different longitudinal cutting means which run parallel to the run-out roller table of said cut-off unit, and at least two longitudinal cutting means, each of said longitudinal cutting means comprising at least one flame cutting means for cutting said slabs longitudinally into said individual lengths of a desired width, a support area for bearing said slabs while being cut longitudinally and which is disposed below said flame cutting means, a cutting point opening in said support area in registry with said flame cutting means, and means for transversely shifting said slabs in respect of said cutting point opening and said flame cutting means, said transversely shifting means being disposed on at least one longitudinal side of said support area.

4,208,040

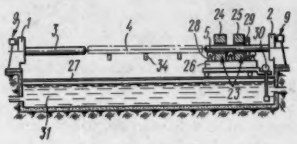
APPARATUS FOR THE GAS CARBURIZING OF THE BORE IN AN OBJECT

Sergei A. Svetlov, prospekt imeni V.I.Lenina, 28, kv. 29; Valentin S. Mokin, prospekt imeni V.I.Lenina, 28, kv. 101; Mark S. Shneiderman, ulitsa Vorovskogo,45, kv. 19; Mikhail G. Selnitsyn, ulitsa Vorovskogo,17-v, kv. 8; Vladimir A. Lupin, ulitsa Gagarina,34-a, kv. 69; Timofei I. Penyaskin, ulitsa Pushkina,56, kv. 107; Gennady P. Stepanov, ulitsa Engelsa,45, kv. 55; Ivan Y. Reger, ulitsa Zykina,55, and Nikolai I. Timkin, ulitsa Svobody,155-a, kv. 62, all of Chelyabinsk, U.S.S.R.

Filed Jun. 30, 1978, Ser. No. 921,051

Int. Cl.² C23C *9/06*

U.S. Cl. 266—121 **3 Claims**



1. An apparatus for gas carburizing the bore in an object, comprising a frame with two brackets; horizontal guides secured to said frame; a platform installed on said horizontal guides provided with a drive for longitudinal displacement; a contrivance for uniformly heating the treated object, said contrivance installed on said platform; a cooling spraying contrivance installed on said platform; a means for feeding gas into the bore of the treated object, said means being attached as a cantilever to one of the brackets of said frame; a manifold for feeding gas connected to a gas line of said means of feeding gas into the bore of the treated object; a means for discharging gas from the bore of the treated object, said means being attached as a cantilever to the second bracket of said frame; a drive causing the means for feeding gas to displace longitudinally and pressing said means to an end face of the treated object, said drive being mounted on the first bracket of said frame; a drive causing the means of discharging gas to displace horizontally and pressing said means to the other end face of the treated object mounted on the second bracket of said frame; a drive causing the treated object to rotate integrally with said means of feeding gas and said means of discharging gas from the bore of the treated object.

4,208,041

METALLURGICAL APPARATUS

Jordan T. Jordanov; Georgi I. Abrashev; Velyu D. Jekov; Georgi T. Georgiev; Georgi A. Haralampiev; Janco H. Janev, and Velcho A. Prodanov, all of Plovdiv, Bulgaria

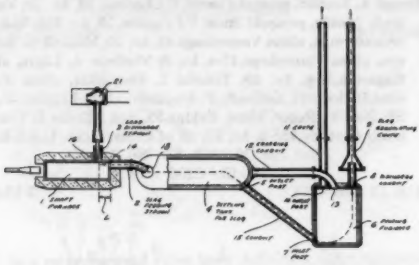
Division of Ser. No. 636,434, Dec. 1, 1975, Pat. No. 4,076,521, which is a continuation of Ser. No. 72,484, Sep. 15, 1970, abandoned, which is a continuation-in-part of Ser. No. 620,018, Mar. 2, 1967, abandoned. This application Aug. 29, 1977, Ser. No. 828,833

Int. Cl.² F27B *1/20*

U.S. Cl. 266—196 **3 Claims**

1. Metallurgical apparatus for the production of non-ferrous metals, comprising a shaft furnace, a settling tank, and a fuming furnace, means for blowing an oxygen-containing gas into a mixture of agglomerate of non-ferrous metal concentrates and a carbonaceous fuel in the shaft furnace, the shaft furnace being maintained under superatmospheric pressure, syphon conduit means communicating at one end with the interior of said shaft furnace for feeding slag continuously therefrom, said feeding conduit means having a discharge end communicating with said settling tank to discharge the slag from the shaft furnace

into the settling tank, connecting conduit means extending between and communicating with said settling tank and fuming furnace for permanently interconnecting and providing a continuous flow between the settling tank and fuming furnace, so that slag from the settling tank flows continuously into the fuming furnace, and discharge conduit means communicating



with said fuming furnace for continuously discharging slag therefrom; and a non-ferrous metal discharge conduit means communicates with said shaft furnace for discharging non-ferrous metal therefrom, said non-ferrous metal discharge conduit means being spaced from said slag-feeding syphon conduit means by a distance of between 500 to 1500 mm.

4,208,042

EVAPORATING CRUCIBLE

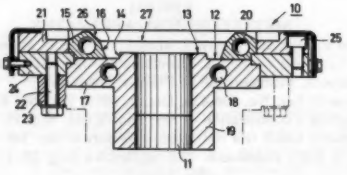
Hans Aichert; Walter Dietrich, both of Hanau am Main; Alfred Hauff, Bruchköbel; Otto-Horst Hoffmann, Rodenbach, and Herbert Stephan, Bruchköbel, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Fed. Rep. of Germany

Filed Nov. 22, 1978, Ser. No. 963,059

Claims priority, application Fed. Rep. of Germany, May 13, 1978, 2821130

Int. Cl.² F27B *14/08*

U.S. Cl. 266—242 **7 Claims**



1. Evaporating crucible comprising a crucible floor and a peripheral rim therearound defining the maximum fill level, said crucible floor having a plurality of floor apertures for the feeding of a plurality of rods of evaporating material and, surrounding each of the floor apertures, at least one superelevated area disposed on a portion of the crucible floor, which reduces the distance at the mouth of each aperture to the maximum fill level of the evaporating material by at least fifteen percent with respect to the distance from the remaining crucible floor to the maximum fill level.

4,208,043

HOLDING VESSEL

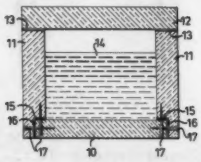
Sven I. Sieurin, Upplands Väsby, Sweden, assignor to Granges Weda AB, Upplands Väsby, Sweden

Filed Jul. 7, 1978, Ser. No. 922,661

Claims priority, application Sweden, Jul. 8, 1977, 7707997; Jul. 8, 1977, 6607998

Int. Cl.² F27D *1/00*

U.S. Cl. 266—275 **13 Claims**



1. A vessel for molten metal, wherein the vessel walls containing said molten metal are constructed of rigid ceramic plates, said vessel walls being connected together at joints with said vessel walls in the region where said walls are connected to form said joints being formed into a plurality of complementary joint surfaces such that adjacent joint surfaces formed at each wall edge for connection to another wall edge are arranged substantially perpendicular to each other so as to form a stepped joint, an intermediate layer of ceramic sealing material between each pair of mutually co-acting joint surfaces, and means for pressing said mutually co-acting joint surfaces against each other, said pressing means comprising individual fasteners located only at said joints and extending into said ceramic plates through respective joint surfaces and said layer of sealing material.

4,208,044

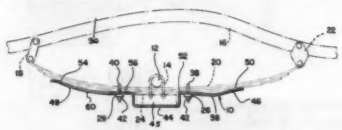
UNIVERSAL SPRING STABILIZER

Herbert Schoenfeld, 816 Pardee La., Wyncote, Pa. 19095

Filed Aug. 10, 1978, Ser. No. 932,423

Int. Cl.² F16F *1/26*

U.S. Cl. 267—48 **8 Claims**



1. In a spring stabilizer designed to stabilize a multi-leaf type automobile spring of the type including a medial axle mounting means, the combination of

a unitary length of spring material adapted to be applied directly against the multi-leaf spring forwardly and rearwardly of the axle mounting means,

said length of spring material being configured to form a medial segment, a forward segment extending forwardly from the medial segment and a rearward segment extending rearwardly from the medial segment, the medial segment defining a clearance space between the spring stabilizer and the axle mounting means;

forward attaching means secured intermediate the medial segment and the forward segment for attaching the forward segment to the multi-leaf spring;

rearward attaching means secured intermediate the medial segment and the rearward segment for attaching the rearward segment to the multi-leaf spring; and

front and rear arch means formed respectively in the forward and rearward segments to apply spring stabilizer forces against the underside of the multi-leaf spring in a

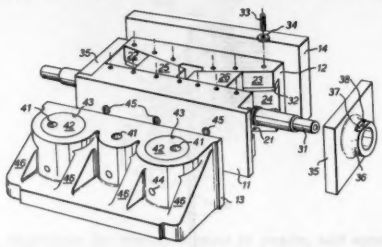
plurality of spaced locations forwardly of the axle mounting means and in a plurality of spaced locations rearwardly of the axle mounting means, the spring stabilizer being adapted not to contact the axle mounting means.

4,208,045

PRESSURE ASSEMBLIES

Howard Rowe, and Paul A. Rowe, both of Kidlington, England, assignors to C.P.R. Engineering Developments Limited, Oxford, England

Filed Mar. 21, 1979, Ser. No. 22,644
Int. Cl.[2] B25B *1/08*
U.S. Cl. 269—100 **10 Claims**



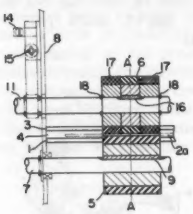
1. A pressure assembly comprising a base plate, a ram, and a pair of wedges located between the base plate and the ram, the wedges having oppositely inclined faces facing the base plate or the ram, the facing surface of the base plate or ram being inclined at the same angle, a thrust bearing fixedly mounted relative to the base plate or the ram at one end thereof, and a screw supported in said thrust bearing for rotation and adapted to move the wedges symmetrically in opposite directions at right angles to the separation of the ram and base plate such that rotation of said screw alters the separation of the ram and base plate.

4,208,046

SHEET FEEDING ASSEMBLY

Masahiro Shimizu, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 14, 1978, Ser. No. 942,354
Claims priority, application Japan, Sep. 16, 1977, 52-125508
Int. Cl.[2] B65H *3/06, 3/46*
U.S. Cl. 271—122 **7 Claims**



1. A sheet feeding assembly for feeding sheet material from a stack, in single sheets comprising:

feed roller means for feeding the sheets sequentially;

a shaft;

separation roller means fixed to said shaft at a predetermined distance from said feed roller means for separating single sheets from the stack;

sheet protecive roller means for preventing sheet damage mounted coaxially on said shaft with said separation roller means and capable of rotation independently from said shaft; and

axial movement prevention means for retaining said sheet protective roller means in axial engagement to said separation roller means;

wherein said sheet protective roller means is slidably engaged with said separation roller means so that when a sheet initially contacts said sheet protective roller means and said separation roller means, said sheet protective roller means resists the movement of the sheet due to inertial effects; and

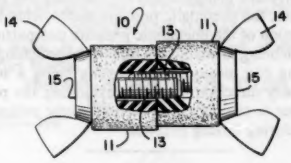
wherein these inertial effects are quickly overcome by the force moving the sheet so that said protective roller means rotates to aid the movement of the sheet and to prevent the sheet from bending.

4,208,047

EXERCISER AND TENSION RELIEVING DEVICE

Gerald P. Olsen, P.O. Box 286, Kemmerer, Wyo. 83101

Filed Sep. 26, 1978, Ser. No. 946,085
Int. Cl.[2] A63B *5/00*
U.S. Cl. 272—67 **2 Claims**



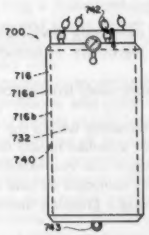
1. An exerciser and tension reliever comprising a pair of generally aligned compressible members each having a central bore formed therein, a pair of externally threaded bolt members extending into one of said bores and threadingly meshing engaging with one another, wing nuts secured to each of said externally threaded members, flanges on each of said wing nuts whereby upon rotation of said wing nuts with respect to one another, the said compressible members are compressed and when the compressive forces applied to said compressible members overcomes the force holding said threaded portions of said bolt members, the said bolt members are caused to retract thereby enabling said compressible members to resume to their original uncompressed condition.

4,208,048

PUNCHING BAG INCLUDING POWER GAUGE

Harold E. Winterbottom, 1702 Lansing Rd., Glen Burnie, Md. 21061

Continuation-in-part of Ser. No. 738,225, Apr. 18, 1977, Pat. No. 4,108,428. This application Aug. 21, 1978, Ser. No. 935,457
Int. Cl.[2] A63B *69/32*
U.S. Cl. 272—76 **1 Claim**



1. In boxing practice apparatus including a punching bag, means for supporting the punching bag, means for indicating

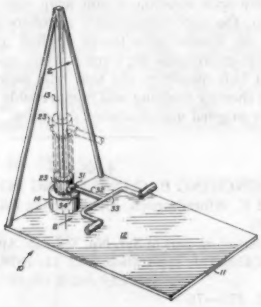
punch power, including a pneumatic pressure compartment associated with at least a portion of said punching bag in position for receiving punches during boxing practice, a pneumatic pressure meter, and means connecting said pneumatic pressure compartment with the pneumatic pressure meter for thereby forwarding pressure increase to and indicating punch power on the pneumatic pressure meter as a function of punch-induced pressure increase in said pneumatic pressure compartment, the improvement comprising: the punching bag being of the cylindrical type filled with mass-imparting material such as jute for fitting the bag for heavy punching practice, the pneumatic pressure compartment and pneumatic pressure meter and connecting means all comprising a slip-on accessory for the punching bag and having a pneumatic-pressure-containing double-wall in cylindrical sleeve shape for covering the punching bag, means for retaining the pneumatic pressure compartment on the punching bag, the means connecting said pneumatic pressure compartment with the pneumatic pressure meter including a check valve for holding a said pressure increase in the pneumatic pressure meter, the check valve having manually actuable means for releasing pressure from the pneumatic pressure meter through the check valve into the pneumatic pressure compartment for resetting the pneumatic pressure meter, the pneumatic pressure meter being located at an upper portion of the pneumatic pressure compartment, said upper portion being locatable at a side of the punching bag, and said punching bag means for supporting being a suspension rotatable in any direction for either exhibiting the pneumatic pressure meter to or concealing the pneumatic pressure meter from a user during boxing practice.

4,208,049

CONSTANT FORCE SPRING POWERED EXERCISING APPARATUS

Robert J. Wilson, 8401 E. Cambridge, Scottsdale, Ariz. 85257

Filed Aug. 21, 1978, Ser. No. 935,469
Int. Cl.[2] A63B *21/02*
U.S. Cl. 272—138 **7 Claims**



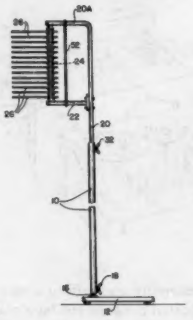
1. A multi-functional exercising device comprising:
a shaft substantially vertically mounted on a horizontal surface,
a first hollow collar immovably fixedly positioned at one end of said shaft,
a plurality of springs mounted within the hollow configuration of said collar and attached to said first collar and each of said springs having a free end extending therefrom,
a second collar slidably mounted on said shaft,
said second collar having a gripping means extending laterally therefrom, and
means mounted on said second collar for selectively grasping the free ends of said springs,
whereby when said first and second collars are attached by means of said springs, said springs will provide a load force on said gripping means when a lifting force is applied to raise said second collar on the shaft relative to said first collar.

4,208,050

JUMP MEASURING APPARATUS

James J. Perrine, 20412 Oxnard St., Woodland Hills, Calif. 91364, and Allen E. Scates, 5314 Crebs Ave., Tarzana, Calif. 91356

Filed Mar. 26, 1979, Ser. No. 23,731
Int. Cl.[2] A63B *5/16, 69/00*
U.S. Cl. 273—1.5 A **8 Claims**



1. Apparatus for measuring the ability of an athlete to jump vertically from a running or standing position, and which includes: a head frame; means for supporting the head frame a predetermined distance above the running or standing surface; a vertical shaft mounted on said head frame; a plurality of horizontally extending vanes mounted in spaced and parallel relationship along the vertical shaft; a plurality of spacing members mounted on said vertical shaft between successive pairs of the vanes; and resilient means for axially loading each vane against an adjacent one of the spacing members.

4,208,051

BASEBALL FIELDING TRAINING AID AND METHOD

Thomas S. Robertson, Rte. 2, Box 120-A, Jacksonville, Tex. 75766

Filed Nov. 18, 1977, Ser. No. 852,833
Int. Cl.[2] A63B *71/02*
U.S. Cl. 273—26 C **2 Claims**

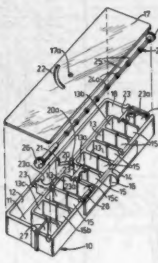
1. An apparatus for training baseball players to catch a ball hit on the ground, said apparatus comprising a relatively thin, rigid, and uniformly thick ball-impingement surface having a finger portion and a thumb portion generally in the shape of the outline of a baseball fielders' glove, said apparatus having means for attachment to one of the player's hands on the side opposite the ball-impingement surface.

4,208,052

PUZZLE GAME HAVING MEMBERS ARRANGEABLE INTO PRESELECTED SEQUENCE

John D. Snow, 260, The Long Shoot, Nuneaton, Warwickshire, England

Filed Feb. 6, 1979, Ser. No. 9,980
Claims priority, application United Kingdom, Feb. 10, 1978, 5384/78
Int. Cl.[2] A63F 7/04
U.S. Cl. 273—113 11 Claims



1. Apparatus for playing a game or puzzle, said apparatus comprising a container defining a row of fixed compartments arranged side-by-side and a track providing interconnecting means between the ends of said row of fixed compartments; an oscillatable slide arranged in the container and defining a movable row of compartments arranged side-by-side, the two rows of compartments being located adjacent and substantially parallel to each other; a plurality of members of at least two identifiable kinds, there being at least one member of each kind; the number of compartments in said slide being at least one more than the number of said fixed compartments, each compartment of each row being of a size such as to accommodate only one of said members and each compartment in each row having an open end adjacent the compartments of the other row to permit entry to or exit from each compartment of a member, the slide being arranged for oscillation between two extreme positions in each of which the open end of a respective end compartment of the slide is positioned to communicate with said track in the container and the open ends of the remaining compartments of the slide are in alignment with the open ends of the fixed compartments; indicator means to indicate at least one pre-selected sequence into which the members are to be arranged in one or other row of compartments or in the track, the interior of at least part of the container being visible from outside the container to enable the sequence of members to be observed; and means operative to permit the sequence of the members to be changed from an initial sequence through one or more intermediate sequences into a final sequence corresponding to the pre-selected sequence indicated by the indicator means, the members being movable between the fixed compartments and the compartments in the slide and through the track by tilting of the container and by oscillation of the slide between its two extreme positions and the sequence being changed by operation of the sequence-changing means.

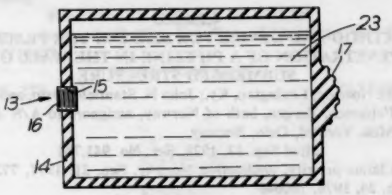
4,208,053

SIMULATED GOLF BALL

Eric Farr, Witchhill, Newburgh, Aberdeenshire AB4 OBL, Scotland

Filed Jun. 30, 1978, Ser. No. 920,790
Int. Cl.[2] A63B 69/36
U.S. Cl. 273—199 R 3 Claims

1. Apparatus for use in practising golf shots comprising a hollow rectangular container having six generally flat sides and weighing 0.65 Kg. when empty, said container having a pair of minor faces at opposite ends, an opening in one minor face of said container, closure means removable disposed in said opening, means weighting said container for use during practice of golf shots including granular or liquid material



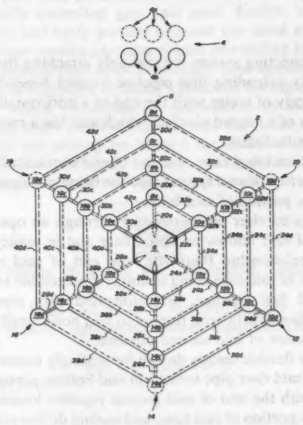
located in said container, said weighted container weighing from 0.7 Kg. to 5.0 Kg., said container having a centrally located domed portion on the other minor face thereof simulating a golf ball.

4,208,054

GAME BOARD HAVING CONCENTRIC AND RADIAL MOVEMENT PATHS

W. James Hahn, Jr., and Jo A. Hahn, both of 4901 Vega Ct. West, Fort Worth, Tex. 76133

Filed Feb. 15, 1978, Ser. No. 877,999
Int. Cl.[2] A63F 3/00
U.S. Cl. 273—258 7 Claims



1. A board game comprising:

an equal number of two types of player pieces, each type of said pieces having a distinguishing indicia;

a center area disposed in the center of the game board;

player piece positions disposed in rows extending radially from said center area;

a plurality of concentric movement paths connecting said player piece positions, said paths having indicia identical to both types of indicia of said player pieces to provide an indication that said pieces may move in either direction along said concentric movement paths; and

a plurality of radial movement paths connecting said player piece positions, said radial movement paths having first and second indicia each identical to one of said player piece indicia to provide an indication of which one type of player pieces may move along one of said radial movement paths such that said first and second indicia alternate between said player positions along a radial line, thereby allowing each player to move between only two radially

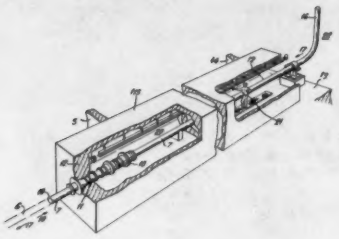
connected said player positions before having to move along one of said concentric movement paths.

4,208,055

METHOD AND DEVICE FOR SEALING THE PLACE OF PENETRATION OF A PIPELINE IN THE WALL OF A SUBMERGED STRUCTURE

Nick Noensie, Lexington, Ky.; John N. Stanfield, Oslo, and Paal Pettersen, Bergen, both of Norway, assignors to A/S Akers Mek. Versted, Oslo, Norway

Filed Sep. 12, 1978, Ser. No. 941,731
Claims priority, application Norway, Sep. 21, 1977, 773240; Feb. 24, 1978, 780649
Int. Cl.[2] F16J 15/12; F16L 1/04
U.S. Cl. 277—1 9 Claims



1. A connecting system for sealingly attaching the end of a horizontally extending first pipeline located beneath the surface of a body of water with the end of a horizontally extending portion of a second pipeline which also has a riser portion, said system including

a hollow enclosed base, said end of said horizontally extending portion of said second pipeline being positioned in said hollow portion of said base,

an elongated riser pipe extending through an opening in a wall of said hollow enclosed base and in sealing, watertight relationship therewith, the end of said riser pipe outside of said base being sealingly connectable to said end of said first pipeline, said elongated riser pipe section extending axially with respect to said horizontally extending portion of said second pipeline,

an axially flexible sealing device for sealingly connecting the end of said riser pipe located in said hollow portion of said base with the end of said second pipeline located in said hollow portion of said base, said sealing device comprising at least one annular member, each annular member including an axially extending inner cylindrical member, at least one outer cylindrical member, and a flexible ring member connecting each said outer cylindrical member to said inner cylindrical member, each said outer cylindrical member being positioned about said inner cylindrical member such that with each said flexible ring member in an untensioned state, each said outer cylindrical member will be separated from one another and will have a portion which extends in an axial direction beyond the adjacent end of said inner cylindrical member; and

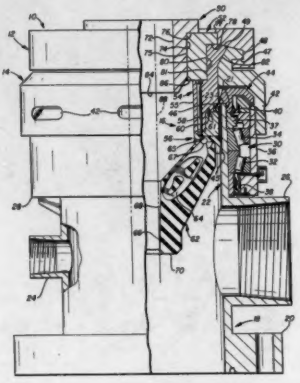
wherein means are connected between said wall of said base through which said rise pipe extends and said end of said second pipeline located in said hollow portion of said base, said connecting means being capable of adjusting the relative positioning between said end of said second pipeline and said wall and thus, via said flexible members, the relative axial positionings of said outer cylindrical members of each annular member with the respective inner cylindrical member.

4,208,056

ROTATING BLOWOUT PREVENTOR WITH INDEX KELLY DRIVE BUSHING AND STRIPPER RUBBER

Morris S. Biffle, 800 W. Front, Midland, Tex. 79701

Continuation-in-part of Ser. No. 843,291, Oct. 18, 1977, Pat. No. 4,154,448. This application May 11, 1979, Ser. No. 38,329
Int. Cl.[2] F16J 15/56; F21B 33/03
U.S. Cl. 277—31 18 Claims



1. A rotating blowout preventor having a main body, a longitudinal extending axial passageway formed therethrough through which a driving member, such as a kelly, can be received; said main body includes an inner fixed sleeve;

a rotatable stripper assembly which includes a stripper rubber for sealingly receiving a longitudinally extending driving member in axial slidable relationship therewith; a stripper mount body to which said stripper rubber is affixed, the lower marginal end of said stripper assembly being rotatably received within the upper marginal end of said main body, a seal means located between said stripper mount body and said inner fixed sleeve for precluding flow of drilling fluid thereacross;

a rotatable, load carrying, outer skirt member axially aligned with said axial passageway and spaced outwardly from said inner fixed sleeve, and having the upper end thereof removably affixed to said stripper mount body to form a bearing housing therebetween, an upper and a lower bearing means axially aligned with one another and with said axial passageway and transferring a load from said load carrying, outer skirt member into said inner fixed sleeve; upper and lower seal means located within the opposed ends of said bearing housing at a location above said upper and below said lower bearing means to isolate the bearing housing from contamination;

drive means associated with said stripper assembly for enabling a driving member to impart rotational motion thereinto which causes said load carrying, outer skirt member to rotate while the load carrying, outer skirt member is rotatably supported by said upper and lower bearing means;

said stripper rubber includes radially spaced reinforcement means arranged to engage the faces of a driving member, so that the corners between the faces of the driving member can be received in the intervening area between the reinforcement means;

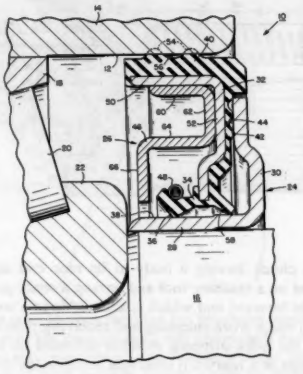
and means by which the drive means is indexed with respect to the stripper rubber so that the corners of a driving member are received in said intervening area.

4,208,057

SEMI-UNITIZED SHAFT SEAL AND METHOD

Edward J. Messenger, Longview, Tex., assignor to Garlock Inc., Longview, Tex.

Filed Mar. 8, 1976, Ser. No. 664,625
Int. Cl.[2] F16J *15/34*
U.S. Cl. 277—37 70 Claims



1. A two-part, separable, semi-unitized shaft seal for providing a seal between a housing bore and a relatively rotatable shaft extending through the bore comprising:

(a) a wear sleeve member including at least one cylindrical flange and at least one radial flange, one of said at least one cylindrical flanges having a press-fit surface for forming a press-fit with one of a bore and shaft, and one of said at least one cylindrical flanges having a wear surface for the below-recited sealing lip, and

(b) a sealing member movable axially onto and off of said wear sleeve member and assembled in semi-unitized relationship relative to said wear sleeve member including a reinforcing ring having a cylindrical flange and a radial flange, a sealing element connected to said radial flange of said reinforcing ring and having an annular sealing lip in sealing contact with said wear surface, a layer of elastomer bonded to one of an I.D. or O.D. surface of said cylindrical flange of said reinforcing ring for forming an interference fit on the other of a bore and shaft, and an elastomeric bumper member bonded to said reinforcing ring and extending axially into contact with a radial face of one of said radial flanges of said wear sleeve member whereby said wear sleeve member and said sealing member can be assembled together for transportation, shipping, and installation as a unitized seal, and

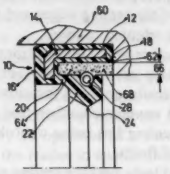
(c) said sealing member being movable axially, with respect to said wear sleeve member, away from and out of contact with said wear sleeve member with said sealing lip being slidable axially off of said wear surface for disassembling said two part, separable, semi-unitized shaft seal wherein upon disassembly of a bore and shaft between which said seal is located, said wear sleeve member and said sealing member also become disassembled, one of said members staying with one of the bore and shaft and the other of said members staying with the other of said bore and shaft.

4,208,058

SHAFT SEAL

Karl Wanner, Echterdingen; Wolfgang Schmid, Plattenhardt, and Martin Hölzel, Riedenberg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 27, 1978, Ser. No. 881,508
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1977, 2718659
Int. Cl.[2] F16J *15/32*
U.S. Cl. 277—153 23 Claims



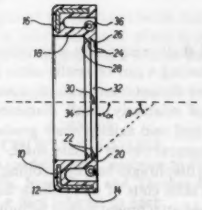
1. A shaft seal for a rotatable shaft which is surrounded by a substantially rigid structural element, comprising a ring-shaped body portion adapted to be supported by the structural element and having an axis, two axially spaced end faces, and an inner surface facing toward the shaft; a radially displaceable ring-shaped inner portion located radially inwardly of said body portion and having an outer surface facing toward said inner surface of said body portion and together with the same forming an axially extending gap, said inner portion being connected with said body portion adjacent one axial end of said gap, said inner portion carrying at least one sealing lip which is urged toward the shaft so as to sealingly abut against the latter and which is subjected to radial vibrations during rotation of the shaft, which vibrations are transmitted to said radially displaceable inner portion and displace the latter; means for urging said one sealing lip toward the shaft; and means for damping radial vibrations of said sealing lip said damping means being separate from said urging means.

4,208,059

SEALS

Leslie A. Fryatt, 20 Talbot Pd., Accrington, Lancashire, England

Filed Dec. 1, 1978, Ser. No. 965,301
Claims priority, application United Kingdom, Dec. 2, 1977, 50256/77
Int. Cl.[2] F16J *15/32*
U.S. Cl. 277—153 10 Claims



1. A rotary shaft lip seal adapted to cooperate with a rotary shaft that has a portion of the shaft located in a fluid so as to inhibit fluid flow along the shaft past the shaft region engaged by the seal, said seal comprising

an annular member having an open central portion surrounding a central axis, said central portion having a diameter approximately equal to the diameter of the rotary shaft around which it is adapted to fit, said annular

member having at least two axially spaced apart annular sealing lips extending inwardly from the inner portion of said annular member toward said central axis,

the innermost portion of said spaced apart sealing lips terminating in axially spaced apart sealing edges that are adapted to contact axially spaced apart portions of the exterior surface of a rotary shaft,

said spaced apart sealing edges and sealing lips defining an annular chamber between themselves and the shaft surface which the sealing edges are adapted to abut, said annular chamber being adapted to accommodate fluid which leaks between one of the sealing edges and the shaft which that sealing edge is adapted to abut,

said annular chamber being divided into two equal portions by a baffle means extending fully across adjacent sealing lips at diametrically opposed locations,

the walls of said annular chamber that are formed by said spaced apart sealing lips being unbroken by inlets for the introduction of fluids,

whereby when fluid leaks past the sealing edge which is closest to a source of fluid and enters said annular chamber, said baffle means will act to interrupt fluid circulation caused by shaft rotation and thereby create between said annular chamber and the environment external thereto, a fluid pressure differential effective to force said fluid back under the sealing edge that it originally leaked past.

4,208,060

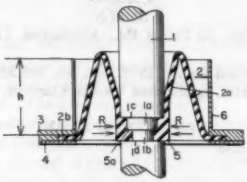
SEALED SHAFT

Wilfred H. St. Laurent, Jr., Marblehead, Mass., assignor to Bellofram Corporation, Burlington, Mass.

Filed Jan. 15, 1979, Ser. No. 3,163

Int. Cl.[2] F16J *15/56*

U.S. Cl. 277—212 FB **6 Claims**



1. A sealed shaft comprising in combination

(a) a shaft having a pair of axially outer portions of relatively large outer diameter and a contiguous axially inner graded portion of relatively small diameter, said axially outer portions and said axially inner graded portion defining a graded integral cavity in said shaft,

(b) a rolling diaphragm having a rolling wall and attachment means at both ends of said rolling wall;

(c) one of said attachment means including a clamping flange for the radially outer end of said rolling wall; and

(d) the other of said attachment means for the radially inner end of said rolling diaphragm including an elastomeric member arranged in coaxial relation to said shaft and surrounding said shaft and including an annular graded projection on said elastomeric member which conforms to the shape of said graded cavity in said shaft, engaging said graded cavity and exerting a radially inward pressure on said portion of relatively small diameter of said shaft.

4,208,061

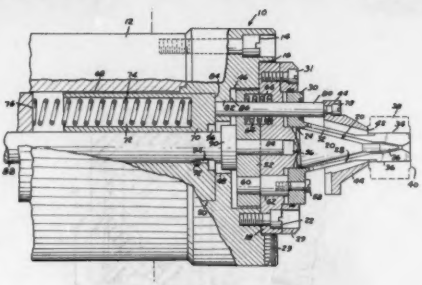
CHUCK WITH RETRACTABLE STOP

London T. Morawski, 15850 Common Rd., Roseville, Mich. 48066

Filed Dec. 1, 1978, Ser. No. 965,289

Int. Cl.[2] B23B *31/40*

U.S. Cl. 279—2 R **13 Claims**



1. A chuck having a body at its rear end adapted to be mounted on a machine tool and having a work-gripping member at its forward end which is actuatable to a work-engaging position and a work-releasing and receiving position, an actuator for the work-gripping member mounted on said body for movement in a rearward direction to cause the work-gripping member to engage a workpiece and in a forward direction to release a workpiece and be conditioned to accept another workpiece, means biasing said actuator in said rearward direction to cause the work-gripping member to assume said work-engaging position, a work-engaging stop mounted on said body for movement in opposite directions between retracted and work-locating positions, means biasing said stop to said work-locating position, a drawbar mounted on said body for axial movement forwardly and rearwardly of the body, means interconnecting said drawbar and actuator for shifting the work-gripping member to the work-releasing position against the biasing force thereon when the drawbar is moved forwardly so that it can accept another workpiece, and means interconnecting the drawbar and stop for retracting the stop against the biasing force thereon when the drawbar is shifted rearwardly, whereby when the drawbar is shifted forwardly, the work-gripping member is actuated to the work-releasing position and is conditioned to receive another workpiece and the stop is biased to said work-locating position and when the drawbar is shifted rearwardly the actuator is biased in a rearward direction to cause the work-gripping member to assume the work-engaging position and the stop is moved to its retracted position.

4,208,062

LIGHTWEIGHT FIFTH WHEEL MECHANISM

Jules B. Maassen, Redmond, Wash., assignor to Paccar Inc., Bellevue, Wash.

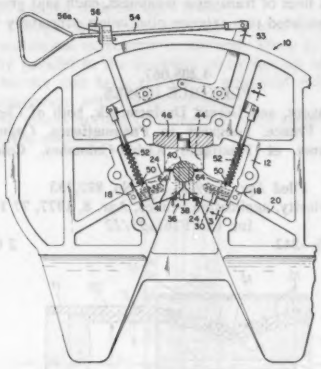
Filed Sep. 5, 1978, Ser. No. 939,676

Int. Cl.[2] B62D *53/12*

U.S. Cl. 280—434 **4 Claims**

1. A fifth wheel assembly comprising a high-strength box frame having aluminum side members joined with top and bottom high-strength plates, bolts removably clamping the top and bottom plates together against the aluminum side members in compression to sandwich the softer aluminum between the higher strength plates and for easy removal of the top plate for maintenance, a rearwardly opening king pin receiving opening in said box frame, generally transversely aligned guide tracks in said top and bottom plates, said guide tracks facing each other and positioned in alignment with said king pin receiving opening, a pair of jaws slidably disposed in said guide tracks ,

said box frame having vertical side plates confronting the guide tracks, said jaws including spring means urging the jaws away from said side plates and toward said king pin receiving opening, locking wedges positioned between said jaws and said side plates for locking the jaws into the king pin receiving opening and being retractable out of the path of the jaws for



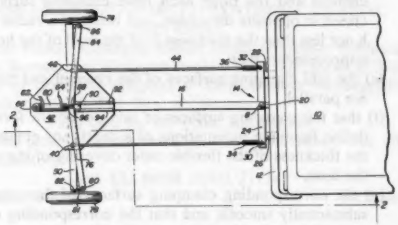
retracting the jaws to open the king pin receiving opening and allow removal of the king pin, said side plates each including a hardened skid plate engaged by said locking wedges, means for retracting said locking wedges, spacer means for holding the jaws outwardly and being engageable by the king pin to be moved away from the jaws and allow the jaws to close on the king pin.

4,208,063

TRAILER STEERABLE WHEN IN REVERSE

Edward S. Baker, Broken Arrow, Okla., and Gilbert L. Barnett, Dale, Ind., assignors to Gil-Bar Trailer Corporation, Tulsa, Okla.

Filed May 10, 1978, Ser. No. 904,619
Int. Cl.[2] B62D *13/06*
U.S. Cl. 280—445 **7 Claims**



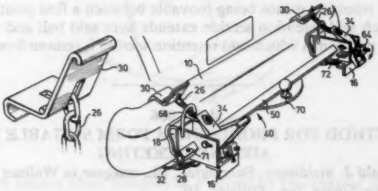
1. A trailer supported by a pair of steerable wheels, steering linkage means connected with said steerable wheels for steerably controlling said wheels and actuating means connected with said steering linkage means for actuation thereof, said actuating means including an actuating member, means pivotally supporting said actuating member from the trailer, means pivotally connecting the actuating member with the steering linkage means whereby pivotal movement of the actuating member will cause movement of the steerage linkage means and steerable movement of the wheels when the pivotal connection means between the steering linkage means and actuating member is spaced from the pivotal connection means between the actuating member and trailer, and means selectively adjusting the pivotal connection means between the actuating member and steering linkage means between a non-steerable position in alignment with the pivotal connection means between the actuating member and trailer with pivot axes of the pivotal connecting means coinciding so that the steering linkage means and steerable wheels will not be steerably moved when the actuating member is pivoted in relation to the trailer and a steerable position with the pivotal connection means between the actuating member and steering linkage means being spaced from the pivotal connection means between the actuating member and the trailer for steerably moving the steering linkage means and the steerable wheels when the actuating member is pivoted in relation to the trailer, said actuation means including means pivoting said actuating member in relation to the trailer, said means pivoting the actuating member including a power device supported by said trailer and connected with said actuating member, said power device being controllable by an operator of a towing vehicle articulately connected to the trailer to enable steering control of the steerable wheels independent of the articulate movement between the trailer and towing vehicle.

4,208,064

HITCH CONSTRUCTION

George Wilson, 83 Cambria St., Stratford, Ontario, Canada (N5A 1G8)

Filed Jul. 19, 1978, Ser. No. 925,948
Int. Cl.[2] B60D *1/14*
U.S. Cl. 280—502 **21 Claims**



1. A hitch comprising:

a hitch body;

a two-armed lever pivotally mounted on the hitch body by a pivot disposed between its two ends;

means mounting the said lever pivot for movement parallel to the pivot longitudinal axis;

two flexible connections each adapted for fastening engagement with a body to which the hitch is to be fastened thereby, and each connected to a respective one of the lever arms, and

moving means mounted by the hitch body and connected to the lever pivot to move the lever pivot in opposite directions to respectively tighten and loosen the flexible connections.

4,208,065

COUPLING GUARD

Robert N. Hansen, Avondale, Ariz., assignor to Walter C. Avrea, Tempe; Ben Martin, Scottsdale and Thomas Kovacic, Avondale, all of, Ariz., a part interest to each

Continuation-in-part of Ser. No. 834,691, Sep. 19, 1977, abandoned. This application Jun. 5, 1978, Ser. No. 912,401
Int. Cl.[2] B60D *1/06*
U.S. Cl. 280—507 **6 Claims**

1. A guard for use in combination with a coupling for detachably securing a towed vehicle to a towing vehicle, said coupling including,

an upstanding ball element having a depending attachment shank received through a bore in a mounting member extending rearwardly from said towing vehicle, and

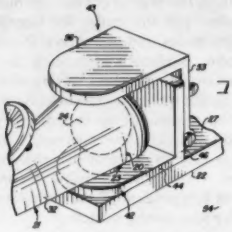
an inverted socket element carried at the free end of a tongue extending forwardly from said towed vehicle,

said socket element being detachably engaged downwardly over said ball element,

and for selectively limiting the upward movement of said socket element relative said ball element, said guard comprising:

a. a base securable to said mounting member;

b. retention means in the form of an angular bracket including,



i. an upright support section carried on the side of said base opposite said ball element, and

ii. a retention section extending angularly from proximate the upper end of said support section and extending over said base and said ball element; and

c. attachment means for pivotally securing said support section proximate the lower end thereof to said base,

said retention means being movable between a first position in which said retention section extends over said ball and a second position in which said retention section is remote from said ball.

4,208,066

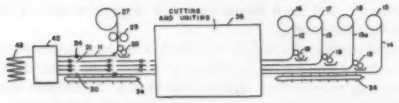
METHOD FOR PRODUCING A FORM SUITABLE FOR AIRLINE TICKETING

Donald J. Steidinger, Barrington, Ill., assignor to Wallace Business Forms, Inc., Hillside, Ill.

Continuation-in-part of Ser. No. 483,952, Jun. 28, 1974, Pat. No. 4,109,936, and a continuation-in-part of Ser. No. 453,556, Mar. 21, 1974, abandoned, and a continuation-in-part of Ser. No. 374,274, Jun. 27, 1973, abandoned. This application Jun. 12, 1978, Ser. No. 914,381

Int. Cl.[2] **B42F** *3/00*; **B42C** *3/00*

U.S. Cl. 282—11.5 A **12 Claims**



1. A method for producing a form suitable for airline ticketing comprising:

advancing a plurality of superposed webs toward a uniting station, said webs being equipped with register means and being printed so as to constitute the interior plies of said form,

advancing a first single web toward said station for union with said plurality of webs, said first single web being equipped with register means and printed so as to constitute one exterior ply of said form,

equipping said first single web with longitudinally spaced lines of transverse weakness,

cutting said plurality of webs along longitudinally spaced lines to provide a series of severed groups of interior ticket plies and,

after said cutting, uniting a second single web with said plurality, said second single web being equipped with register openings and printed so as to constitute the other exterior ply of said form, said other exterior ply also being equipped with longitudinally spaced lines of transverse weakness aligned with the longitudinally spaced lines of transverse weakness in said first single web, each said group being positioned between two pairs of adjacent spaced lines of transverse weakness, each said group and the associated two exterior plies being adhesively united.

4,208,067

FLEXIBLE HOSES

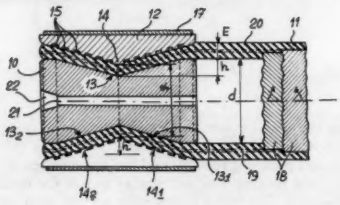
Bernard Ragout, and Gérard Devlacminck, both of Clermont-Ferrand, France, assignors to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes, Colombes, France

Filed Apr. 3, 1978, Ser. No. 892,753

Claims priority, application France, Apr. 8, 1977, 77 11189

Int. Cl.[2] **F16L** *33/22*

U.S. Cl. 285—242 **2 Claims**



1. In a flexible, high-pressure hose having

(a) a wall made of elastomeric material;

(b) a stress-resistant reinforcement formed by at least two superimposed layers of cables inclined in opposite directions and embedded in said wall so as to define a flexible outer covering of said elastomeric material,

(c) a spigot inserted in one end of said hose;

(d) an external clamping collar surrounding said end of the hose in which said spigot is inserted; the spigot and the collar having formed on their respective adjacent surfaces a single channel and a single corresponding ridge having a radial height at least equal to the thickness of said wall, the channel and the ridge each have clamping surfaces inclined in opposite directions, and being of a radial height h not less than the thickness E of the wall of the hose, the improvements that;

(e) the said clamping surfaces of the channel and the ridge are parallel,

(f) that the clamping surfaces of said collar are formed to define fastening indentations of a depth not greater than the thickness of the flexible outer covering of the wall of the hose,

(g) the corresponding clamping surfaces of the spigot are substantially smooth, and that the corresponding clamping surfaces of said spigot and said collars are assymmetrical about the bottom of the channel and about the crest of the ridge respectively, two of the said surfaces having a shallow inclination of between 10° and 20° and two of said surfaces having a steeper inclination.

4,208,068

SLIDING DOOR LOCK

Peter F. Hauber, Burbank, Calif., assignor to Reflectolite Products, Inc., Sun Valley, Calif.

Filed Feb. 26, 1976, Ser. No. 661,709

Int. Cl.[2] **E05C** *19/10*

U.S. Cl. 292—126 **4 Claims**

1. A sliding door lock assembly comprising an elongated body for securing a sliding door to a frame;

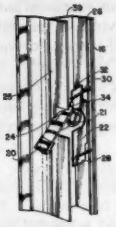
said body defining an opening adjacent to the frame surface to which the door is to be locked;

a generally T shaped latch member extending through said opening with the head of the T shaped member within said body whereby said latch member is unable to pass through said opening;

said latch member including a hook portion for engaging and locking with the door frame;

said T shaped latch member being mounted for pivotal and translational movement in said body about an axis generally parallel to the direction of elongation of said body whereby said hook portion is rotational into or out of engagement with the door frame;

spring means normally biasing the latch member into unlocked position;



lever means movably secured to said body whereby in one position said lever member engages said T shaped latch to hold said latch in a frame engaging position and movable to a second position wherein said latch is disengaged from the frame;

wherein said latch member spring means biases said T shape against a surface of said body toward the frame whereby an external force applied to said hook portion of said latch member in a direction toward the opening in said body produces translational movement of said latch member against the restraint of said spring members; and

said latch member engages said lever means whereby translational movement of said latch member moves said lever to an unlocked position.

4,208,069

BUMPER-SUPPORT BODY CONSISTING OF GLASS-FIBER-REINFORCED SYNTHETIC PLASTIC MATERIAL

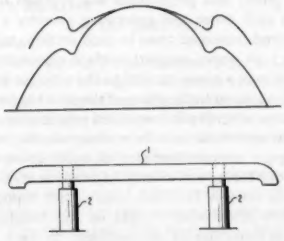
Guntram Huber, Aidlingen; Hubert Hutai, Grafenau; Wolfgang Klie, Korntal, and Wolfgang Fischer, Echterdingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Oct. 13, 1977, Ser. No. 841,930

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1976, 2650096

Int. Cl.² B60R *19/00, 21/14*

U.S. Cl. 293—102 **9 Claims**



1. In a bumper member for motor vehicles of the type having an approximately U-shape cross-section, the improvement wherein the average wall thickness of the bumper member varies along its length in approximate correspondence with a curve of the bending moments calculated for the critical load cases over the length of the bumper, areas of greatest average wall thickness corresponding to areas of greatest loading, for reducing the weight of the bumper by minimizing the amount of material required and for producing substantially uniform stressing of the bumper member under loading conditions, wherein said bumper member is formed of glass-fiber reinforced synthetic plastic material, characterized in that fastening means are formed-in as part thereof, in that parts attached thereto include shock absorbers and parts used in towing the motor vehicle, said bumper member further comprising imbedded reinforcement means and characterized in that the fastening means are integrally connected with the reinforcing means.

4,208,070

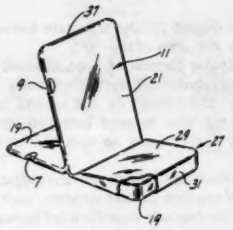
LEISURE CHAIR

Robert C. Geschwender, Lincoln, Nebr., assignor to Concept Engineering, Inc., Lincoln, Nebr.

Filed Sep. 26, 1978, Ser. No. 945,856

Int. Cl.² A47C *13/00*

U.S. Cl. 297—118 **9 Claims**



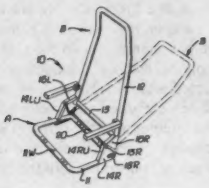
1. A leisure chair comprising a generally rectangular frame bent on a line extending transversely of the frame so as to be generally L-shaped as viewed from the side with support and backrest frame portions, a cover for the frame adapted to extend between opposite sides of the backrest frame portion, and a cushion swingable relative to the frame about said bend line at the juncture of said support and backrest frame portions, said chair being adapted to be positioned on a floor in a first position in which the support portion of the frame rests flat on the floor and the backrest frame portion at one end of the support portion constituting its front end extends upwardly and rearwardly from said one end of the support portion with the cover providing a backrest, and in which said cushion extends forwardly from the frame and rests on the floor for providing a seat, said chair being adapted to be overturned from said first position to a second position in which the support portion of the frame extends upwardly from the floor and the backrest frame portion slopes downwardly from the upper end of the support portion to the floor with the cover presenting a reclining surface, the cushion being swingable to a position in which it rests substantially flat against said surface to provide a headrest for one reclining on said surface, the outer ends of the support and backrest frame portions being formed for non-rocking engagement with the floor when the chair is in said second position, said cover being of relatively flexible material and generally tubular in shape, having opposing walls extending between opposite sides of the frame when the cover is on the frame and being open at one end for allowing the cover to be slipped on and off the frame, the cover further having a pocket formed integrally therewith for holding said cushion.

4,208,071

RECLINABLE SEATING STRUCTURE

James B. Pesiri, Dana Point, Calif., assignor to J. C. Sales & Mfg. Co., Inc., Irwindale, Calif.

Filed Dec. 29, 1977, Ser. No. 865,706
Int. Cl.[2] A47C *1/025*
U.S. Cl. 297—369 **3 Claims**



1. A frame for a seating structure adapted to be moved from an upright to a plurality of reclinable positions, the frame being constructed and defined to be upholstered for use in a motor vehicle such as a van, motor home or the like comprising

a first tubular structure constructed and defined as a closed loop of a preselected configuration and of a width for accepting and securing a seating structure and rigidly constructed to function as a frame for the seating structure,

a second U-shaped tubular structure having a preselected length for the arms of the "U",

a straight tubular element secured adjacent the open end of the second tubular structure functioning as a cross arm to close the "U" formed by the second tubular structure whereby the thus secured arrangement is adapted for accepting and securing an upholstered back supporting structure,

a pair of upstanding flat plates secured adjacent the opposite corners of the first tubular member, each of the upstanding plates having only their forward facing ends defined to have a U-shaped configuration with the U-opening towards the rear of the tubular member,

the above-defined back supporting structure including flat dependent plates having toothed portions adjacent one end and secured thereto adjacent the opposite ends of said straight tubular element, the flat plates having only their forward dependent ends arranged on the ends opposite to the toothed portions defined to have a U-shaped configuration with the U-opening toward the rear and arranged to be inclined downwardly and extending forwardly with respect to said second tubular structure so as to terminate adjacent the U-shaped portions of the upstanding plates,

the free ends of each of the aforementioned U-shaped portions of the upstanding and dependent plates having their free ends recessed for permitting relative pivotal movement,

a pair of pivot pins for individually coupling each one of the upstanding plates to one of the dependent plates and being coupled to extend between the arms ofeach U-shaped portion of said plates and said members at the recessed ends thereof and to be secured thereto for permitting the flat plates having the toothed portions to slide on the inside surfaces of an individual one of said upstanding plates,

spring wire means wrapped around each of the pivot pins and having elongated ends seated along and completely nested against the inside surfaces of each of the U-shaped portions of said coacting upstanding and dependent plates for biasing the back supporting structure towards an upright position, whereby the spring wire means is isolated from any upholstery material and the like to thereby eliminate any interference for the operation of a reclining control means,

a control rod extending between the upstanding plates at the rear ends thereof and adjacent the back portion of the first tubular structure, the control rod extending through the upstanding plates,

a pair of link elements secured to the free ends of the control rod for sliding movement with the outside surfaces of the upstanding plates,

a pair of latching pins secured to the opposite ends of the link elements from the control rods,

the upstanding elements having apertures defined adjacent each of the latching pins for permitting the pins to extend therethrough and to controllably slide therein from one end of an aperture to the opposite end, while being moved into and out of engagement with the teeth of said toothed members,

manual control means secured to the control rod for moving the latching pins into and out of engagement with the teeth of the toothed members, and

yieldable means individually secured between each latching pin to one of the U-shaped portions of said plates secured by the pivot pins, the yieldable means being defined for urging the latching pins into engagement with the teeth of the toothed member for maintaining the second tubular element in the selected position relative to the first tubular structure.

4,208,072

STACKABLE STOOL

Alex O. Iskendarian, 1839 N. Winona St., Los Angeles, Calif. 90027

Filed Sep. 19, 1978, Ser. No. 943,640
Int. Cl.[2] A47C *7/00*
U.S. Cl. 297—440 **7 Claims**

1. Furniture of the class described comprising a pair of identical truncated conical sections including a circular lower base and a smaller parallel upper base formed from a thin plastic sheet material, each section having two upwardly extending, upwardly tapered projections and two downwardly extending, downwardly tapered recesses, said projections extending above the small base of the truncated conical section, said projections and recesses dividing each section into four equal parts, said projections and recesses diametrically opposite to each other and generating thereby a coaxial upwardly tapered truncated cone in each section, said truncated cone having an upper support surface concentric with the conical section in a plane parallel to the circular lower base at least closely adjacent to the plane of the small upper base of the conical section whereby in assembled relationship, the projections on one section fit into the recesses on the other section with the upper support surfaces of each upwardly tapered truncated cone facing and closely adjacent to each other when no weight is on the furniture, said upper support surfaces abutting each other when weight on the furniture causes a controlled deformation of the sections, to form a centrally disposed abutment support inside the assembled section whereby the sections can carry greater weight.

4,208,073

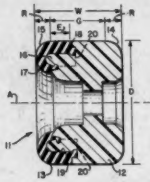
WHEEL FOR SKATEBOARDS AND ROLLER SKATES

Al Hechinger, P.O. Box 66373, Los Angeles, Calif. 90066

Filed Mar. 27, 1978, Ser. No. 890,392

Int. Cl.[2] A63C *17/22*

U.S. Cl. 301—5.3 4 Claims



1. A wheel for skateboards and roller skates, said wheel having a given overall diameter and width as measured in directions respectively normal and parallel to the axis of the wheel and including in combination:

(a) a first annular wheel portion of material having a first given coefficient of friction; and

(b) a second annular wheel portion of material having a second given coefficient of friction higher than said first given coefficient of friction, said second annular wheel portion being coaxial with and bonded to said first portion, said first portion having a reduced diameter hub extending axially within said second portion, the interior of said second annular portion receiving said hub including projections extending radially inwardly and circumferentially into said hub to rotationally lock said second annular wheel portion to said first annular wheel portion, the outer peripheral edges of said first and second portions each having a radius of from 0.1 to 0.3 of said given width, the radius of the outer peripheral edge of said second portion constituting the edge on the outer axial end of the wheel when mounted on a skateboard or roller skate, continuing in a radial and axial inward direction to cover the outer peripheral edge of said hub to thereby inhibit separation of the first and second portions, the non-radiused ground contacting extent of said second portion in the width direction being from 0.25 to 0.75 to the overall ground contacting extent of both said first and second portions, the outer radiused edges aiding movement of a skateboard or roller skate upon which said wheel is mounted in transition over ground ridges running at acute angles to the direction of motion of said board.

4,208,074

HYDRAULIC PRESSURE CONTROL SYSTEM

Noriakira Ishigami, Chiryu, Japan, assignor to Aisin Seiki Company, Limited, Aichi, Japan

Continuation of Ser. No. 839,593, Oct. 5, 1977, which is a continuation of Ser. No. 666,310, Mar. 12, 1976. This application Jul. 27, 1978, Ser. No. 928,422

Claims priority, application Japan, Mar. 13, 1975, 50/30872; Mar. 19, 1975, 50/33734

Int. Cl.[2] B60T *8/26*

U.S. Cl. 303—6 C 11 Claims

1. A hydraulic pressure control system for brakes for use within motor vehicles having a dual master brake cylinder and a first and second independent wheel brake line, comprising:

a housing having an axial bore defined therein;

a first fluid chamber defined within said bore and fluidically connected to said master cylinder;

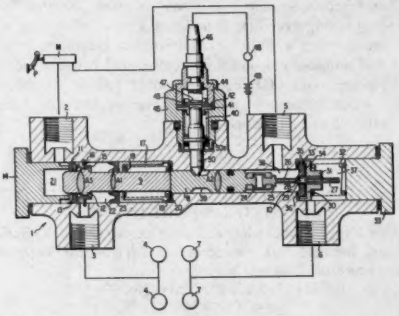
a second fluid chamber defined within said bore and fluidically connected to a first wheel brake cylinder means of said vehicle, such that said master cylinder, said first and second chambers, and said first wheel brake cylinder means define said first brake line;

pressure control valve means, including first stepped piston means and a valve member cooperable with said piston means, disposed within said first brake line and said first and second fluid chambers, for controlling fluidic communication between said first and second chambers and for limiting the fluid pressure transmitted from said master cylinder to said first brake line;

a third fluid chamber defined within said bore and fluidically connected to said master cylinder and second wheel brake cylinder means of said vehicle, respectively, wherein said master cylinder, said third chamber and said second wheel brake cylinder means define said second brake line;

said first stepped piston means including a first pressure receiving area for receiving hydraulic pressure from said second wheel brake line, and second and third pressure receiving areas for receiving hydraulic pressure from said first wheel brake line, said third area being larger than said first area which, in turn, is larger than said second area, said pressure fluids received upon said first and third pressure areas acting in opposite directions;

said valve member being cooperable with said third area for performing said pressure control function;



failure-warning means, operatively connected to said first stepped piston means to be actuated thereby, for indicating a failure within said first and second brake lines and;

metering valve means, including second stepped piston means, disposed within said third chamber for delaying the transmission of the fluid pressure transmitted from said master cylinder to said second wheel brake cylinder means, a stem portion, integrally connected to said second stepped piston means, having an enlarged diameter sealing means, and valve means annularly disposed about said stem portion and cooperable with sealing means for controlling the fluidic communication between said master cylinder and said second wheel brake cylinder means;

whereby said first stepped piston is axially movable within said bore to actuate said failure-warning means when said first and second brake lines are subjected to a fluidic failure, respectively, and said pressure control valve means is terminated and full master brake cylinder pressure is supplied to said first wheel brake cylinder means through said first brake line when said second brake line is subjected to a fluidic failure.

4,208,075

ZERO CLEARANCE LINEAR BEARING APPARATUS

William B. Templeton, Howell, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sep. 25, 1978, Ser. No. 945,523

Int. Cl.[2] F16C *29/02*

U.S. Cl. 308—4 R 7 Claims

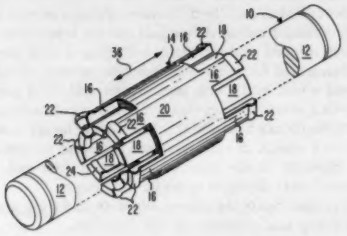
1. Zero clearance linear bearing apparatus permitting sliding axial movement of one member relative to another while constraining said bearing apparatus against axial longitudinal rocking or tilting motion comprising,

a first member arranged for sliding movement relative to a

second member, said first member including an elongate cylindrical element having a number of castellations at each opposite end thereof,

a housing support for said first member,

said first member being slideably receivable within said housing, with alternate ones of said castellations engaging



said second member and said housing thereby fixedly positioning said first member within said housing while maintaining a finite, predetermined clearance between said housing and said first member and between said first member and said second member enabling concurrent axial movement of said first member and said housing relative to said second member.

4,208,076

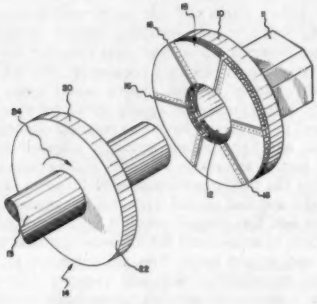
COMPLIANT HYDRODYNAMIC BEARING WITH IMPROVED SUPPORT ELEMENT

Stanley Gray, Skaneateles, and John A. McCormick, Ballston Lake, both of N.Y., assignors to Mechanical Technology Incorporated, Latham, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,255

Int. Cl.[2] F16C *32/06*

U.S. Cl. 308—9 **15 Claims**



1. A compliant, hydrodynamic fluid film bearing for dynamically supporting a high speed rotating rotor in a mount, comprising at least one bearing module including:

a flat, flexible bearing sheet having a bearing surface facing a corresponding bearing surface on the rotor;

a compliant supporting element lying between said bearing sheet and said mount for resiliently supporting said bearing sheet;

said element including two support sheets, each having a pattern of raised resilient projections formed thereon, said projections on one of said support sheets being in series with the projections on the other support sheet, so that the support sheet can be made of heavy gauge material having a high load capacity and low overall stiffness.

4,208,077

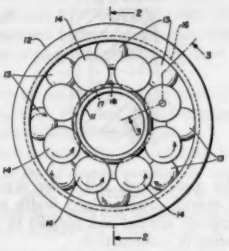
CONTINUOUS CONTACT BALL AND ROLLER BEARING

Ernest Roiz, 1936-B 94th Ave., Oakland, Calif. 94603

Continuation of Ser. No. 824,719, Aug. 15, 1977, abandoned. This application Jan. 25, 1979, Ser. No. 6,556

Int. Cl.[2] F16C *19/20, 19/49*

U.S. Cl. 308—200 **2 Claims**



1. A bearing comprising:

concentric radially spaced circular inner and outer races mounted for rotation around a common axis and in a common plane perpendicular to said axis;

a first of said races being formed in said plane with an annular recess of segmental circular form in cross section;

a plurality of bearing balls dimensioned and mounted for rolling engagement in said recess;

a second of said races being formed in said plane with an annular convex rib confronting said recess and of circular segmental form in cross section, said rib having a radius of curvature similar to the radii of curvature of said recess and balls, said second race being formed with annular cylindrical lands concentric to said axis and on opposite axial sides of said rib;

a plurality of substantially spool-shaped bearing members each having a medial portion formed with an annular recess of circular cross section dimensioned and mounted for rolling engagment on said rib, said last-named recesses each having a radius of curvature similar to the radius of curvature of said balls and receiving said balls therein for rolling contact, said members having cylindrical shoulders at their opposite ends dimensioned and positioned in rolling engagement on said lands; and

the number and dimensions of said balls and members providing slack-free engagement between said races, balls and members with one of said balls being mounted in rolling contact with and between and maintaining separation of each adjacent pair of members, and one of said members being mounted in rolling contact with and between and maintaining separation of each adjacent pair of said balls and with all of said balls in simultaneous continuous and exclusive rolling contact with said first race and said members, and all of said members in simultaneous continuous and exclusive rolling contact with said second race and said balls.

4,208,078

CYLINDRICAL ROLLER BEARINGS

Toshio Miki, Shimmachi, Japan, assignor to Koyo Seiko Company Limited, Osaka, Japan

Continuation-in-part of Ser. No. 828,965, Aug. 29, 1977, abandoned. This application Jul. 10, 1978, Ser. No. 923,665

Int. Cl.[2] F16C *33/46*

U.S. Cl. 308—217 **5 Claims**

1. A cylindrical roller bearing comprising inner and outer rings, a plurality of rollers positioned between said inner and outer rings, a one-piece machined retainer positioned between said inner and outer rings and having pockets for retaining the rollers arranged between the inner and outer rings of the bear-

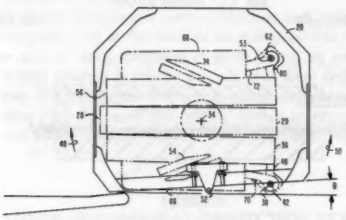
ing, said retainer being positioned out of contact with the inner and outer rings, said retainer comprising a pair of annular members disposed close to the opposite ends of the rollers, beam portions integrally extending from the radially inner peripheries of the annular members at equal spacing circumferentially thereof and having side faces defining the roller pockets and shaped at an angle to support the rollers, and cantilever projections axially extending a substantial distance over the rollers from the outer radial peripheries of the annular members from which they project integrally in parallel opposed relation to the beam portions so as to prevent the rollers from dropping out of the roller pockets and limit the amount of radial movement of the rollers therein, the opposite ends of the beam portions being slanted on the outer side thereof, the cantilever projections providing larger circumferential and radial clearances to the roller than the clearances between the opposite side faces of the beam portions and the roller whereby the contact between the cantilever projections and the rollers is prevented during the rotation of the bearing.

4,208,079

HIGH DENSITY INTEGRATED CIRCUIT PACKAGE

Philip G. Prado, Manassas; Raymond L. Stuckey, Sterling, and Fredrick O. Volles, Manassas, all of Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 24, 1979, Ser. No. 5,946
Int. Cl.[2] H05K 7/16
U.S. Cl. 312—202 **4 Claims**



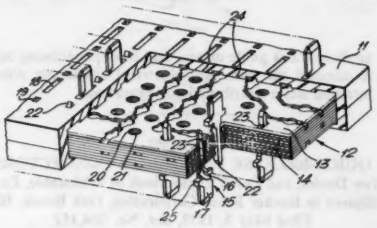
1. A high density electronic cabinet, comprising:
a housing having an opening with a first horizontal width, a bottom horizontal platform and a top horizontal platform;
a central core assembly rotatably mounted in said housing on a central bearing on said lower and upper platforms for rotational motion about a first vertical axis;
a first gate pair on said central core assembly for mounting electronic circuit cards thereto having a second horizontal width greater than said first width, hingedly mounted along a second vertical axis displaced from said first vertical axis, each gate of said first gate pair having a pin side and a card side;
said first gate pair being deployed through said housing opening by rotating said core about said first vertical axis in a first direction **48** and rotating said gate pair about said second axis in a second direction **50** opposite to said first direction, extending the first gate pair through said housing opening;
the two gates of said first gate pair movable as a single unit and each gate being separable from the other gate of the pair to expose the pin sides of each gate of the pair for diagnostic inspection.

4,208,080

JUNCTION BOXES

Vladimiro Teagno, Turin, Italy, assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 819,741, Jul. 28, 1977, abandoned. This application Jul. 3, 1978, Ser. No. 921,426
Claims priority, application United Kingdom, Aug. 18, 1976, 34372/76
Int. Cl.[2] H01R 29/00
U.S. Cl. 339—18 B **4 Claims**



1. A junction box assembly comprising:
a. a housing having opposing spaced apart surfaces of generally rigid, insulating material with the surfaces containing terminal-receiving apertures, some of said apertures being elongated and others being square with the location of the apertures being such that an aperture of one shape on one surface is in alignment with an aperture of the other shape on the other surface;
b. a plurality of terminal boards sandwiched between the opposing housing surfaces, each of the boards comprising a metal sheet laminated with an insulating sheet, further, said boards having perforations therethrough where electrical contact therewith is not required; and
c. a plurality of terminals of the type having at one end a post of square cross-section and at another end a tab, the tab being elongated in cross-section, said posts being receivable in the square apertures and tabs being receivable in the elongated apertures.

4,208,081

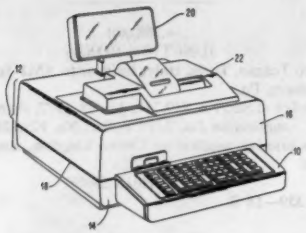
EASILY RECONFIGURABLE DATA ENTRY TERMINAL

Dennis H. Kekas, Raleigh; Robert C. Lynch, Cary; James A. Mathewson; Ronald P. McAdams, both of Raleigh, and Harry Pasterchick, Jr., Cary, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 3, 1979, Ser. No. 745
Int. Cl.[2] G06C 7/02
U.S. Cl. 339—31 R **7 Claims**

1. A data processing terminal which is readily convertible from an integrated configuration to a distributed configuration, said terminal comprising:
a base unit having guide means at one wall and electrical circuitry terminating in an electrical connector at the same wall;
a keyboard unit having guide means at an exterior surface thereof complementary to the base unit guide means and electrical circuitry terminating in an electrical connector complementary to said base unit connector, said keyboard unit being positionable either in an integrated configuration wherein it is secured to said base unit by said complementary guide means with said connectors being in direct contact or in a distributed configuration spaced from said base unit with said connectors being electrically coupled through an auxiliary cable; and

a filler panel comprising a central panel having guide means at opposite side edges similar in configuration to said



keyboard unit guide means, said filler panel being adapted to conceal the base unit electrical connector when the terminal has a distributed configuration.

4,208,082

QUICK-RELEASE ELECTRICAL CONNECTORS

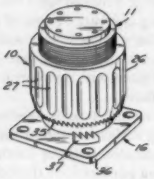
Andrew Davies, and Derek Taylor, both of Whitstable, England, assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed May 9, 1978, Ser. No. 904,152

Claims priority, application United Kingdom, May 9, 1977, 19389/77

Int. Cl.[2] H01R *13/62*

U.S. Cl. 339—45 M **5 Claims**



1. A two-part screw-coupling electrical connector comprising a normally inoperative ratchet means engageable between one of the two parts and a rotatable coupling member on the other of the two parts to become operative only when the connector approaches a fully mated condition by rotation of the coupling member in a mating direction and an audible indication that the fully mated condition is being approached, said ratchet means providing a lock against contra-rotation of the coupling member in an unmating direction, and wherein means are provided permitting the locking action provided by the ratchet means to be overridden by disengagement of the two parts of the connector in an axial direction.

4,208,083

SOLDERLESS ELECTRICAL CONNECTOR

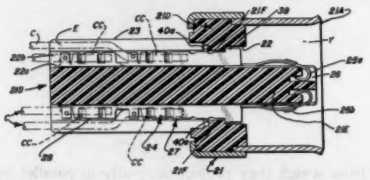
Edward Kirby, Elk Grove Village, Ill., assignor to TRW Inc., Cleveland, Ohio

Continuation of Ser. No. 774,462, Mar. 4, 1977, abandoned. This application Aug. 16, 1978, Ser. No. 934,076

Int. Cl.[2] H01R *13/38*

U.S. Cl. 339—97 P **2 Claims**

1. A solderless electrical connector for electrical conductors having cores of conductive material encompassed by insulation covers, said connector comprising a housing of dielectric material provided with a plurality of spaced pockets, each pocket having a base surface and an entry opposite thereto; and a plurality of electrical contact elements, one being fixedly disposed within each pocket and being adapted to simultaneously accommodate and make electrical contact with the conductors extending through the pocket entry, each contact element being of one piece construction and including a mating portion and a plurality of adjacent conductor-receiving termination portions, a corresponding segment of each portion being interconnected, each termination portion being provided with a separate entry for each conductor, said separate entry being aligned with the pocket entry, each termination portion including elongated sidewall sections arranged in opposed spaced relation and interconnected to one another by a floor section in supporting engagement with the pocket base surface, said sections substantially defining a channel having an open side forming said separate entry, at least one sidewall section of each termination portion being provided with a pair of longitu-



dinally spaced jaw means extending from adjacent said floor section to substantially said separate entry and projecting toward the opposite sidewall section and cooperating therewith to form a pair of relatively spaced narrow passages extending substantially transversely of said channel and from the separate entry to substantially the floor section, said narrow passages opening to said separate entry and into which a segment of a single conductor is adapted to be positioned independently of any other conductor, the jaw means of each termination portion effecting rupturing of the insulation cover and making electrical contact with the core of the segment of a conductor disposed within the narrow passages.

4,208,084

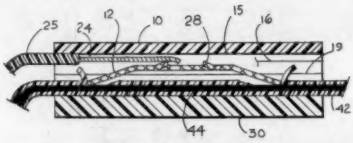
CONNECTOR FOR ELECTRICAL STRIP CABLE

David I. Kali, 4312 E. Seventh St., Tucson, Ariz. 85711

Filed Nov. 21, 1977, Ser. No. 853,216

Int. Cl.[2] H01R *13/38*

U.S. Cl. 339—98 **10 Claims**



1. A connector for making electrical connection between an electrical wire and an electrical conductor within an insulated electrical strip cable assembly comprising a cover; an electrical contact operably connected to said cover; and a base adapted to receive said cover in mating relationship; said cover including means to receive an associated electrical wire, and said electrical contact including a protruding pointed louver to engage and hold the associated electrical wire, both said cover electrical wire receiving means and said electrical contact pointed louver co-acting to receive, engage, and hold the associated electrical wire; said base also adapted to receive an associated strip cable assembly between said mated cover and base; said electrical contact also defining a flexible elongated square cornered metal strip, said metal strip having a bend therein proximate one end, said one end having a right angle edge, said right angle edge adapted to engage and scrape away the associated strip cable assembly insulation to make electrical connection with the associated conductor whereby electrical connection may be made between the associated strip cable assembly and the electrical contact to the associated electrical

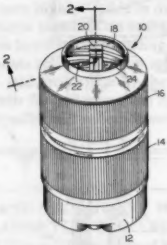
wire when the flexible electrical contact turned down end scrapes away insulation of strip cable assembly as the cover and the base are mated.

4,208,085

ASSEMBLED WEDGE RING FOR ELECTRICAL CONNECTORS

George J. Lawrence, North Kingstown, and Herbert E. Kronsberg, Newport, both of R.I., assignors to General Electric Company, New York, N.Y.

Filed Mar. 29, 1978, Ser. No. 891,378
Int. Cl.[2] H01R *13/58*; D06N *7/00*
U.S. Cl. 339—103 C 3 Claims



1. A cord clamp for electrical connector comprising an inner insulating collar, said collar having internal spaced ramps,
a set of double wedge elements disposed in said ramps,
an outer insulating collar,
said collar having an internal beveled surface disposed for contact with the set of double wedge elements,
means for moving said inner collar axially relative to said outer collar to move said double wedge radially against a cable passing through said collars,
said set of double wedges being formed integrally with a yieldable connection web
said double wedges and inter-connection web being formed integrally and in the form of an elongated flat element
one end of said elongated element being an end double wedge adapted to receive a latching element and the other end of said element being a latching element adapted to inter-lock into said end double wedge to bring the web and set of double wedges into annular form.

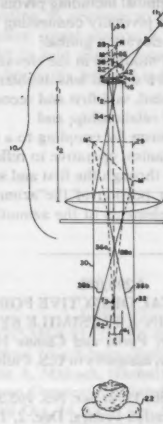
4,208,086

THREE-DIMENSIONAL PROJECTION SYSTEM

Lawrence M. Perry, 417 Julia St., Apartment #102, Huntsville, Ala. 35805

Filed May 28, 1976, Ser. No. 690,915
The portion of the term of this patent subsequent to Mar. 17, 1995, has been disclaimed.
Int. Cl.[2] G02H *1/22*
U.S. Cl. 350—3.85 6 Claims

1. A projection system for providing a three-demensional image in space suitable for audience viewing comprising:
imaging means for creating in a discrete first region an optically focusable virtual image, or, alternately, an object;
first lens means having a first focal length f_1, and responsive to said image in said first focal region for projecting said image in a second focal region;
second lens means having a focal length f_2, greater than the focal length of said first lens means, and responsive to the image appearing in said first focal region for projecting an enlarged image in a third focal region; and
an Arnulf afocal plate positioned in optical circuit with said second lens, and comprising a plurality of positive-negative lens pairs wherein the focal length of a positive lens f_3 of a said pair is greater than the focal length of a negative lens f_4 of a said pair, and wherein f_2/f_1 is equal to f_3/f_4, f_3 and f_4 having the same reference point.

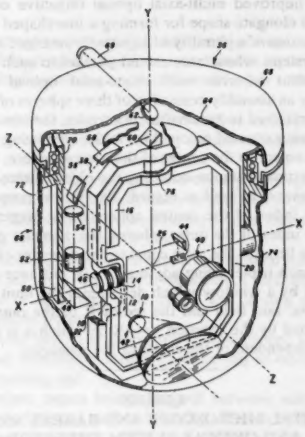


4,208,087

OPTICAL FLEXURE JOINT

Erwin E. Cooper, Carrollton, and Samuel R. McKenney, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 27, 1978, Ser. No. 946,247
Int. Cl.[2] G02B *23/02*
U.S. Cl. 350—16 3 Claims



1. An optical flexure joint comprising:
(a) a housing, said housing including a stationary portion, a viewer tube connected to the stationary portion, and a rotating portion;
(b) an azimuth gimbal connected to the rotating portion of the housing, said azimuth gimbal having a tubular portion;
(c) a plurality of optical relay elements mounted in the tubular portion of the azimuth gimbal, said elements forming an optical path selectively through the azimuth gimbal to the viewer tube;
(d) an elevation gimbal including tubular pivots forming a

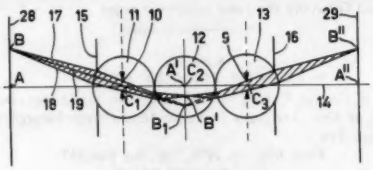
horizontal axis, said pivots pivotally connecting the elevation gimbal and azimuth gimbal;
(e) a cross elevation gimbal including pivots forming a vertical axis, said pivots pivotally connecting the cross elevation gimbal to the elevation gimbal;
(f) a first lens doublet mounted in the elevation gimbal at its horizontal axis, and a second lens doublet mounted in the cross-elevation gimbal, said first and second lens doublets in a juxtapositional relationship; and
(g) a reflector mechanism for coupling to a sighting device, said reflector mechanism operative to reflect the image of the sighting device through the first and second lens doublets to the tubular portion of the azimuth gimbal, and through the relay elements of the azimuth gimbal to the viewer tube.

4,208,088

MULTI-AXIAL OPTICAL OBJECTIVE FOR AN OPTICAL READ HEAD IN A FACSIMILE SYSTEM

Jean-Jacques Hunzinger, Paris, and Claude Hily, Ozouer-le-Voulgis, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 30, 1978, Ser. No. 965,359
Claims priority, application France, Dec. 2, 1977, 77 36340
Int. Cl.[2] G02B *11/08*
U.S. Cl. 350—31 **8 Claims**



1. An improved multi-axial optical objective of the type having an elongate shape for forming a line-shaped image and which consists of a plurality of adjacently arranged mono-axial optical systems whose axes extend parallel to each other, the improvement wherein each mono-axial optical system is formed by an assembly consisting of three spheres of an optical material, referred to hereinafter as a triplet, the centers of said spheres being situated on one line, said triplet being symmetrical with respect to the center of the central sphere, as regards the geometrical distance including the object distance and the image distance, as well as regards the optical properties, the refractive index of the central sphere being larger than the refractive index of the outer spheres, the diameter of the central sphere being at the most equal to the diameter of the outer spheres, each triplet being adjoined on its entrance as well as on its exit by a window which determines the limit field y of each triplet, said field and the radius R of the outer spheres being related by the function $y=\alpha R$, in which α is a constant which is dependent of the shape of the windows.

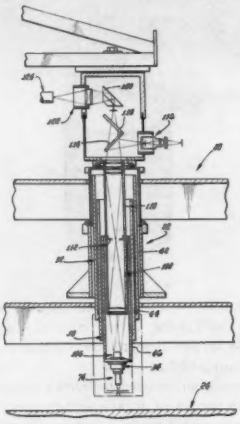
4,208,089

INTRAVITAL MICROSCOPE AND BARREL ASSEMBLY AND OPTICAL SYSTEM THEREFOR

Daniel J. Netto, Los Angeles County, Calif., assignor to University of Southern California, Los Angeles, Calif.

Filed Dec. 8, 1978, Ser. No. 967,587
Int. Cl.[2] G02B *21/00, 7/22*
U.S. Cl. 350—46 **14 Claims**

1. In a microscope assembly, the combination of:
(a) a supporting structure
(b) telescopically interconnected upper, intermediate and lower tubes carried by said supporting structure and defining an optical axis, said upper tube being axially movable mounted on said supporting structure, said intermediate tube being axially movably relative to said upper tube, and said lower tube being axially movable relative to said intermediate tube;
(c) interengageable stop means on said lower and intermediate tubes for limiting downward movement of said lower tube relative to said intermediate tube;
(d) first lock means for locking said lower tube relative to said intermediate tube;
(e) second lock means for locking said intermediate tube relative to said upper tube;
(f) adjustable needle bearing means for guiding said upper tube for axial movement relative to said supporting structure.
(g) an objective carried by said lower tube above a field in an object plane, and coaxial with said optical axis;



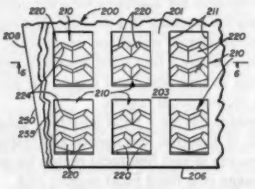
(h) a field corrector carried by said lower tube above said objective, and coaxial with said optical axis, for producing a collimated beam;
(i) a stationary image transfer lens assembly carried by said supporting structure above said field corrector and coaxial with said optical axis;
(j) a stationary beam splitter carried by said supporting structure above said image transfer lens assembly for diverting part of the beam laterally and transmitting part of the beam upwardly; and
(k) beam receiving means carried by said supporting structure for receiving the laterally diverted and upwardly transmitted beam.

4,208,090

REFLECTOR STRUCTURE

Sidney A. Heenan, Park Ridge, Ill., assignor to Amerace Corporation, New York, N.Y.

Continuation of Ser. No. 625,723, Mar. 24, 1967, abandoned.
This application Dec. 22, 1976, Ser. No. 753,132
Int. Cl.[2] G02B *00/00*
U.S. Cl. 350—61 **8 Claims**



1. A reflector structure for reflecting daylight falling

thereon and for reflecting light back toward the source thereof, said reflector structure comprising a one-piece body of transparent material having a substantially smooth light receiving front face, said body having therein a plurality of recesses extending from the rear thereof toward said front face and each defining a cell surrounded by a support wall, the rear faces of said support walls defining a continuous support surface extending substantially throughout the rear of said body, a backing member covering substantially all of the rear of said body and hermetically sealed to said support surface along all portions thereof thus hermetically to seal each of said cells, said backing member having associated therewith means defining a light-diffusing, opaque surface in the area corresponding to said support surface, said light-diffusing surface diffusively reflecting from said reflector structure daylight falling upon said front face in the area thereof corresponding to said support surface for reflecting the daylight therefrom to render said reflector structure highly visible in daylight, a plurality of retrodirective reflector elements on said body in said recesses, and oriented therein to reflect light falling upon said front face, said reflector elements reflecting from said reflector structure light falling upon said front face in the area thereof corresponding to said cells for reflecting the light back toward the source thereof to render said reflector structure highly visible at night.

4,208,091

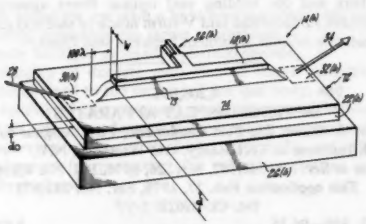
BROADBAND MICROWAVE WAVEGUIDE MODULATOR FOR INFRARED LASERS

Peter K. Cheo, and Meyer Gilden, both of West Hartford, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 782,866, Mar. 30, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 960,509

Int. Cl.[2] G02B 5/14

U.S. Cl. 350—96.13 **6 Claims**



1. A broadband microwave waveguide modulator for phase modulating infrared laser signals provided by a laser source to a guided laser propagation path in the modulator, in response to microwave modulation signals presented from a microwave signal source, comprising:

a monolithic thin-film optical waveguide structure of electrooptic material having two mutally parallel sides of substantially equal length and width, including a multilevel first side and a planar second side, said first side having major and minor surfaces each parallel to said second side and displaced therefrom by a minimum dimension and by a maximum dimension respectively, said minor surface comprising the upper surface of a raised ridge projecting above said major surface and extending longitudinally along a central portion of said first side, said ridge having both length and width smaller than that of said first side, said ridge and the portion of said structure between said ridge and said second side defining a guided laser propagation path;

optical couplers, one disposed at each end of said raised ridge on said first side, for coupling the infrared radiation from the laser source through said guided laser propagation path in a selected TE propagation mode; and

a pair of microwave electrodes, one disposed on said minor surface and co-extensive with said ridge and one disposed on said second side surface co-extensive with that portion bounding said guided laser propagation path, said electrodes providing, in response to modulation signals from the microwave signal source, a microwave modulated electric field in said guided laser propagation path for phase modulating the infrared radiation therein.

4,208,092

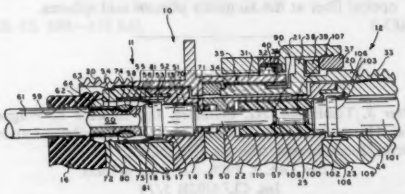
FIBER OPTIC MULTI-CABLE PAIR CONNECTOR

Kevin J. Monaghan, Middlebury; Russell C. Schwickert, Newtown, and John A. Makuch, Danbury, all of Conn., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Oct. 14, 1977, Ser. No. 842,187

Int. Cl.[2] G02B 5/14

U.S. Cl. 350—96.21 **41 Claims**



1. A fiber optic connector assembly comprising:

a pair of fiber optic connector members for optically coupling forward ends of optical fibers of a pair of fiber optic cables;

said pair of fiber optic connector members including at least one connector member having a rigid terminating member, a channel, and retainer means;

a resilient sleeve for aligning and closely spacing said forward ends of said optical fibers of said pair of fiber optic cables, said resilient sleeve floating within said channel of at least one connector member;

said terminating member having a longitudinal bore dimensioned for receiving said forward end of said optical fiber of one of said fiber optic cables and having and outer engageable portion;

said channel having an inner surface dimensioned for receiving said terminating member and having an inner engageable portion; and

said retainer means being disposed between said channel inner surface and said terminating member to retain said terminating member within said channel against rearward movement, said retainer means comprising a unitary member including a forward end portion having means for engaging said terminating member outer engageable portion and a rearward end portion engaging said channel inner engageable portion, said retainer means having integral resilient means freely urging said terminating member forward into said resilient sleeve;

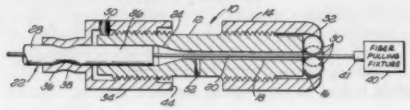
whereby said pair of fiber optic connector members can optically couple said forward ends of said optical fibers of said pair of fiber optic cables in aligned and closely spaced relationship for efficient light transfer.

4,208,093

FIBER OPTIC FERRULE AND METHOD OF TERMINATING SAME TO A CABLE

Leslie M. Borsuk, Los Alimitos, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 3, 1978, Ser. No. 957,643
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.20 **11 Claims**



1. A method of terminating a ferrule to a light transmitting optical fiber comprising the steps of:

providing a ferrule containing a set of spheres arranged in closely adjacent relationship defining an interstitial space therebetween, said spheres being dimensioned to each engage the optical fiber to be inserted into said space;

inserting said optical fiber into said ferrule from the rear thereof until said fiber extends through said space forwardly beyond said spheres;

applying tension to said optical fiber; and

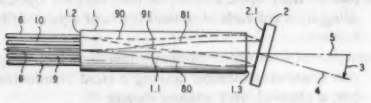
contracting said spheres radially inwardly to cleave said optical fiber at the tangency poin of said spheres.

4,208,094

OPTICAL SWITCH

Walter J. Tomlinson, III, Holmdel, and Richard E. Wagner, Fair Haven, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 2, 1978, Ser. No. 947,651
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.20 **16 Claims**



1. Apparatus for selectively coupling light which comprises:

an optical focusing lens element having first and second end surfaces and a lens axis passing through said optical focusing lens element axially from said first to said second surface;

an optical source terminated on said first surface of said optical focusing lens element substantially at said lens axis;

a plurality of optical receptors terminated on said first surface of said optical focusing lens element, all at substantially the same radial displacement from said lens axis and at a plurality of angular displacements about said lens axis;

a reflecting surface disposed at said second surface of said optical focusing lens element;

characterized in that

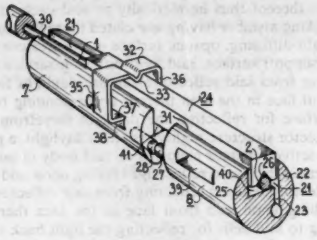
said reflecting surface is a plane reflecting surface disposed at said second surface of said optical focusing lens element in such a manner that an angle is formed between a normal to said reflecting surface and said lens axis, said plane reflecting surface being rotatable about said lens axis so that said angle is maintained at a fixed value, whereby light emanating from said optical source is selectively coupled to any of said plurality of optical receptors terminated at said plurality of angular displacements about said lens axis by rotating said plane reflecting surface.

4,208,095

CONNECTOR FOR AN OPTICAL MONOFIBRE

Christian Malsot, Suresnes, France, assignor to Socapex, Suresnes, France

Filed Feb. 17, 1978, Ser. No. 878,722
Claims priority, application France, Feb. 23, 1977, 77 05252
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.21 **3 Claims**



1. A coupler for detachably joining the ends of a pair of optical fibers comprising:

a pair of positioning sleeves, each having surfaces defining a flexible groove;

means for coaxially aligning said sleeves;

a rod having a longitudinal V-form notch therein for at least partially receiving said pair of optical fibers in substantially coaxial alignment, said rod positioned such that said notch receiving said optical fibers faces said surfaces of said positioning sleeves and said rod having a width substantially equal to the unflexed width of said groove to fit securely within said groove;

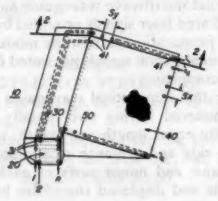
means for holding said rod securely against said optical fibers and for holding said optical fibers against said groove surfaces and said V-form notch of said rod so as to maintain coaxial alignment between said fibers.

4,208,096

OPTICAL DISPLAY APPARATUS

William E. Glenn, Jr., Fort Lauderdale, Fla., assignor to New York Institute of Technology, Old Westbury, N.Y.

Division of Ser. No. 745,187, Nov. 26, 1976, Pat. No. 4,116,739.
This application Feb. 27, 1978, Ser. No. 881,671
Int. Cl.[2] G02B 5/17
U.S. Cl. 350—96.25 **5 Claims**



1. An optical display apparatus, comprising:

a light input surface defined by one end of each of a multiplicity of elongated optical carrier strands, said one ends being arranged in a relatively closely spaced array of rows and columns; and

a light output surface substantially perpendicular to said light input surface, said light output surface being defined by the other ends of said strands, said other ends being arranged in a relatively remotely spaced configuration of rows and columns;

each column of strands extending rearwardly from said

input surface to a depth which depends upon the column's position in the order of columns;

each strand of a column bending sidewardly at its point of greatest depth to an orientation which is substantially parallel to said input surface;

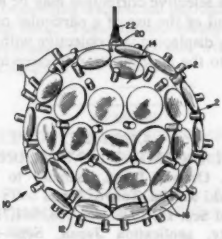
the strands of each column being of different length with each strand of a column terminating at a transverse position which depends upon its row order in the column, such that said other ends of the strands of the columns of the input surface define columns of the output surface which are at less than a right angle with respect to the columns of the input surface.

4,208,097

REFLECTING TARGET FOR ELECTRONIC DISTANCE MEASURING

Phillip Yorgensen, Kemmerer, Wyo., assignor to The Kemmerer Coal Company, Frontier, Wyo.

Filed Sep. 18, 1978, Ser. No. 943,147
Int. Cl.² G02B 5/14
U.S. Cl. 350—97 **12 Claims**



1. A target for use with a light-emitting electronic distance measuring apparatus, the target comprising,

a body having a generally spherical surface,

a plurality of discrete multi-faceted return reflective elements fixed to the surface of the said body, and

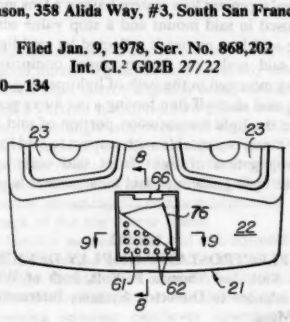
a plurality of discrete guard means interspaced between the said reflective elements and extending outward from the spherical surface of the body beyond the said reflective elements for protecting the reflective element surfaces from abrasion.

4,208,098

ODOR DISPENSING SYSTEM FOR HAND-HELD STEREOSCOPIC VIEWER AND REPLACEABLE CONTAINER THEREFOR

Frank Johnson, 358 Alida Way, #3, South San Francisco, Calif. 94080

Filed Jan. 9, 1978, Ser. No. 868,202
Int. Cl.² G02B 27/22
U.S. Cl. 350—134 **3 Claims**



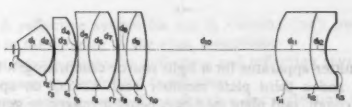
1. A hand-held device comprising a casing, a stereoscopic viewer in said casing having actuating means, a compartment comprising a cavity formed in said casing, a replaceable container of odor-producing non-liquid substance, said container having a seal, adhesive means on said seal, said seal being manually removable independently of said actuating means by pulling said seal from said container when it is desired to dispense odor into the atmosphere adjacent said stereoscopic viewer, said adhesive means for said seal being capable of being resealed after opening, said container comprising a cup having an open top, an aroma-carrying substance within said cup, said substance being of the group including solids, gels, and liquid-impregnated absorbent material, and in which said seal fits across and detachably adheres to said top, said container being insertable in and removable from said cavity, whereby, upon opening said seal by pulling away said adhesive means, aroma is released from said container to the atmosphere adjacent said viewer, means isolating said compartment from the remainder of said viewer, and a removable cover for said compartment, said container being insertable in and removable from said compartment when said cover is removed, said cover having odor passage holes and a second removable seal for said holes, said second seal being resealable.

4,208,099

MICROSCOPE OBJECTIVE LENS SYSTEM

Tsutomu Tojyo, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 6, 1978, Ser. No. 883,669
Claims priority, application Japan, Mar. 14, 1977, 52-26969
Int. Cl.² G02B 21/02
U.S. Cl. 350—175 ML **6 Claims**



1. A microscope objective lens system comprising a front lens group comprising a first lens component of a positive meniscus lens having its concave surface faced to the object side, a second lens component of a positive lens, a third lens component of a positive cemented lens, and a fourth lens component of a positive cemented lens, and a rear lens group comprising a fifth lens component of a cemented lens having its concave surface faced to the image side, and said lens system satisfying the following conditions:

(1) $-0.05 \leqq f_1/f_2 \leqq 0.05$
(2) $1.3 \leqq r_7/r_1 \leqq 1.75$
(3) $70 \leqq [(\nu_4-\nu_3)+(\nu_6-\nu_5)] \leqq 90$
(4) $(\theta_7-\theta_8)/(\nu_8-\nu_7) \leqq 0.005$
(5) $1.68 < |r_{10}/r_{11}| \leqq 2.5$
(6) $1.57 \leqq |r_{11}/r_{13}| \leqq 1.8$
(7) $-0.2 \leqq (n_2-1)/(r_3)f \leqq 0.03$
(8) $-0.1 \leqq (n_5-1)/(r_8)f \leqq 0.1$
(9) $0.6f < (d_1/n_1)+d_2 < f$

wherein the reference symbols f_1 and f_2 represent equivalent focal lengths of the front lens group and the rear lens group, respectively, r_1 and r_2 represent radii of curvature of the surface on the object side and the surface on the image side of the first lens component, respectively, ν_3, ν_4, ν_5, ν_6, ν_7 and ν_8 represent Abbe's numbers of both the lenses of the third lens component, both the lenses of the fourth lens component and both the lenses of the fifth lens component, respectively, θ_7 and θ_8 represent θ defined by $\theta=(n_g-n_F)/(n_F-n_c)$ of both the lenses of the fifth lens component, respectively, the reference symbol f represents a focal length of the entire system, r_3, r_8, r_{10}, r_{11} and r_{13} represent radii of curvature of the surface on the object side of the second lens component, the surface on the object side and the surface on the image side of the fourth lens component and the surface on the object side and the surface on the image side of the fifth lens component, respectively, d_1 represents a thickness of the first lens component, d_2 represents

an airspace between the first lens component and the second lens component, and n_1, n_2 and n_5 represent refractive indices of the first lens component, the second lens component and the lens on the object side of the fourth lens component, respectively.

4,208,100

APPARATUS FOR CONTROLLING THE CROSS SECTION OF A BEAM OF LIGHT

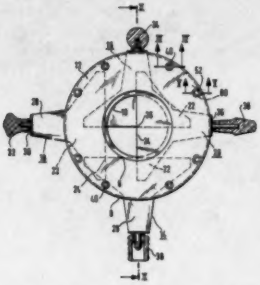
Johann Bischl, Volkartstr. 17, 8000 Munich 19, Fed. Rep. of Germany

Filed Feb. 23, 1978, Ser. No. 880,384

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1977, 7707291[U]

Int. Cl.² G05D *25/00*

U.S. Cl. 350—272 **8 Claims**



1. Shutter apparatus for a light source comprising: a first, a second and a third plate member each having an aperture therethrough, said plate members being arranged in generally parallel adjacent planes with said second plate member between said first and said third plate members and with said apertures aligned to define a light path; securing means mounting said plate members together in spaced juxtaposition with a first gap defined between said first and said second plate members and with a second gap defined between said second and said third plate members; first shutter means comprising slide means mounted in said first gap for guided movement between said first and said second plate members transversely of the direction of said light path; second shutter means comprising slide means mounted in said second gap for guided movement between said first and said second plate members transversely of the direction of said light path; resilient means interposed as part of said securing means for resiliently securing said plate members together to facilitate operative movement of said first and said second shutter means within said first and said second gaps, respectively, and mounting means for mounting one of said first and said third plate members on a light source, and retaining means on the other of said first and said third plate members for retaining a light permeable filter in alignment with said light path.

4,208,101

IMMERSION OBJECTIVE FOR A MICROSCOPE

Lothar Trapp, and Rudolf Conradi, both of Heidenheim, Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

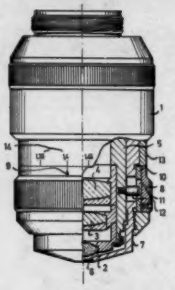
Filed Nov. 29, 1977, Ser. No. 855,675

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1976, 2655041

Int. Cl.² G02B *21/02*

U.S. Cl. 350—175 ML **11 Claims**

1. An immersion objective for a microscope for use with a plurality of optically different immersion substances, said objective comprising a tubular housing and a plurality of lens elements having a common optical axis, a plane-parallel front optical element carried by said housing and with respect to which said objective is selectively displaceable in the direction of said optical axis and over a predetermined axial range of adjustability, and an externally exposed refractive-index scale indicative of the displacement of said optical element; whereby, depending upon refractive index of the immersion



substance used, a selective correction may be made for image defects arising out of the use of a particular one of said substances by axially displacing said objective with respect to said optical element to the appropriate refractive-index indication of said scale.

4,208,102

ENLARGEMENT LENS MOUNT

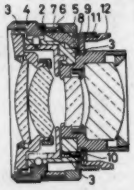
Zenichi Ohkura, Omiya, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 12, 1978, Ser. No. 941,713

Claims priority, application Japan, Sep. 16, 1977, 52-124686[U]

Int. Cl.² G02B *7/02*

U.S. Cl. 350—252 **10 Claims**



1. In an enlargement lens system having a lens mount, a light guide disposed in said mount and a stop value scale wherein light inside said lens mount is reflected by said light guide to illuminate said scale, the improvement comprising, a light shut-off ring mounted in the path of light passing through said light guide, said shut-off ring having a cut away portion corresponding to the light transmission portion of said light guide, wherein said ring is rotatable with respect to said lens mount to prevent propagation of light from said scale and passing through said light guide into said enlargement lens system.

4,208,103

ELECTROSTATIC DISPLAY DEVICE

Charles G. Kalt, and Thomas F. Kalt, both of Williamstown, Mass., assignors to Dielectric Systems International, North Adams, Mass.

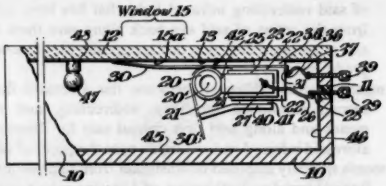
Filed Sep. 1, 1977, Ser. No. 829,821

Int. Cl.² G02F *1/19*

U.S. Cl. 350—269 **22 Claims**

1. An electrostatic device of the class having a fixed elec-

trode, a variable resilient sheet electrode and an insulative layer positioned therebetween wherein the application of a voltage between said two electrodes causes a portion of said variable electrode to move toward and become coadunate with said fixed electrode, the improvement comprising a closed chamber containing said electrodes, said chamber having at least one light-transparent window in one otherwise



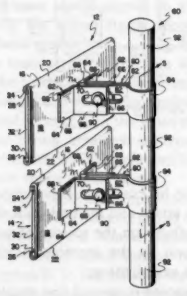
opaque side thereof the other sides of said chamber being opaque, a variable electrode mounting means for mounting one end of said variable electrode adjacent to said window for blocking light from being transmitted through said window for a predetermined range of said applied voltage, and for permitting light to be transmitted through said window for another predetermined range to said voltage.

4,208,104

BRACKET SUPPORTED SIDE VIEW MIRROR SYSTEM

Soren E. Peterson, 1649 W. 3300 South, Salt Lake City, Utah 84119

Filed Jan. 17, 1979, Ser. No. 4,110
Int. Cl.[2] G02B *7/18;* A47G *1/24*
U.S. Cl. 350—304 **1 Claim**



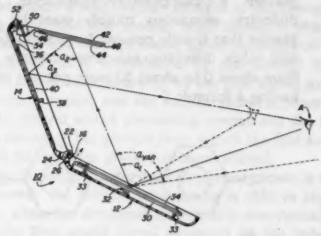
1. A vehicle side view mirror assembly comprising:
two spaced mirror segments, one vertically disposed above the other, each mirror segment being contained in a substantially vertical plane, the two planes being disposed at a small acute angle one in respect to the other;
each mirror segment comprising a frame in which a mirror is securely carried, the two mirror frames being juxtaposed but spaced from each other without direct connection;
first bracket means rigidly and non-adjustably connected to the back of the top mirror frame;
second bracket means rigidly and non-adjustably connected to the back of the bottom mirror frame;
frame means by which the assembly is firmly secured to the outside of a vehicle at the side thereof, the frame means comprising separate cantilever means by which each mirror bracket means are connected to and supported by the frame means;
the separate cantilevered means each defining at least one anchor site spaced a substantial distance from the associated mirror frame about which the associated mirror segment may be independently manually rotated;
whereby one mirror accommodates reflective viewing of other vehicles substantially to the rear and the other mirror accommodates reflective viewing of vehicles substantially in the operator's blind spot.

4,208,105

REFLECTIVE DEVICE AND METHOD FOR VIEWING ONE'S OWN FACIAL AREAS

Kenneth E. Hadwiger, Charleston, Ill., assignor to Jerry Grifith, Charleston and Goldsmith Yamasaki Specht, Chicago, both of, Ill., part interest to each

Filed Dec. 7, 1978, Ser. No. 967,120
Int. Cl.[2] G02B *5/08*
U.S. Cl. 350—306 **12 Claims**



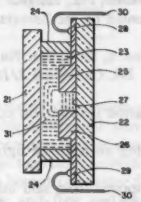
1. A reflective system for use in viewing one's own facial areas in the vicinity of the eyes, comprising
first mirror means for collecting and reflecting rays of light emanating from said facial areas,
second mirror means for collecting and reflecting said rays of light reflected from said first mirror means,
third mirror means for collecting and reflecting said rays of light reflected from said second mirror means, and
said first, second and third mirror means being mutually positioned with said third mirror means substantially facing said facial areas, with said first mirror means below said third mirror means, and with said second mirror means above said first mirror means.

4,208,106

FLUORESCENT DISPLAYS

Chan S. Oh, Diamond Bar, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation-in-part of Ser. No. 727,113, Sep. 27, 1976, abandoned. This application Jul. 27, 1978, Ser. No. 928,491
Int. Cl.[2] G02F *1/13;* C09K *3/34*
U.S. Cl. 350—345 **18 Claims**

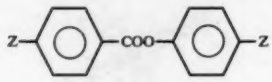


1. A fluorescent medium comprising:
(a) from about 0.01 to about 10 weight percent of a rigid, lath shaped, fluorescent dye guest having a uniform major polarization axis and
(b) from about 90 to 99.99 weight percent of a host comprising a liquid crystal material selected from a group consisting of:

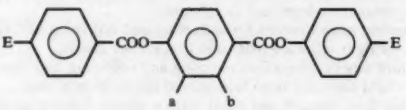
(i) 4-cyano-4'-R-biphenyl, wherein R is selected from a group consisting of alkyl and alkoxy groups containing from about 3 to about 10 carbon atoms per group;

(ii) mixtures thereof; and

(iii) a nematic solution comprising a positive dielectric anisotropy moiety and another dielectric anisotropy moiety, said positive dielectric anisotropy moiety comprised of from about 0 to about 100 mole percent of said 4-cyano-4'-R-biphenyl and from about 0 to about 100 mole percent of 4'-cyanophenyl-4-Y-benzoate, wherein Y is selected from a group consisting of alkyl and alkoxy groups containing from about 1 to about 9 carbon atoms per group, provided that if said positive dielectric anisotropy moiety is comprised of 0 mole percent 4-cyano-4'-R-biphenyl, said positive dielectric anisotropy moiety must be comprised of greater than 0 mole percent 4'-cyanophenyl-4-Y-benzoate and if said positive dielectric anisotropy moiety is comprised of 0 mole percent 4'-cyanophenyl-4-Y-benzoate, said positive dielectric anisotropy moiety must be comprised of greater than 0 mole percent 4-cyano-4'-R-biphenyl; and said other dielectric anisotropy moiety comprised of from about 0 to about 50 mole percent of a compound having a formula I



and from about 50 to about 100 mole percent of a compound having formula II



wherein each Z is independently selected from a group consisting of alkyl and alkoxy groups containing from about 1 to about 9 carbon atoms per group, wherein each E is independently selected from a group consisting of alkyl and alkoxy groups containing from about 1 to about 7 carbon atoms per group, and wherein a and b are independently selected from a group consisting of hydrogen and chlorine, provided that if a is chlorine, b must be hydrogen and if b is chlorine, a must be hydrogen.

4,208,107

DRUGLESS EYE EXAMINATION SYSTEM

Frank J. Oharek, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 6, 1978, Ser. No. 867,550
Int. Cl.[2] A61B *3/10*
U.S. Cl. 351—7 **5 Claims**

1. An eye examination instrument, comprising in combination:

means for projecting an infrared light along a first optical axis;

means spatially disposed from said infrared light projecting means along said first optical axis for receiving and passing therethrough the infrared light therefrom along said first optical axis and for receiving and redirecting a red light from along a second optical axis in such manner that it, too, will be directed along the aforesaid first optical axis with some degree of coincidence with the aforesaid infrared light;

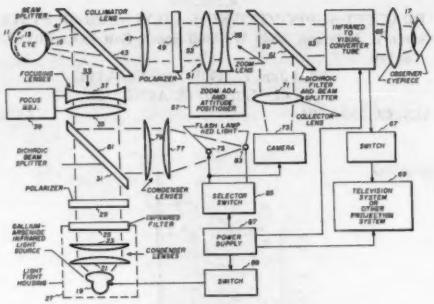
means spatially disposed from said receiving, passing, and redirecting means and in contiguous disposition with said second optical axis for supplying said red light thereto;

means spatially disposed from the aforesaid receiving, passing, and redirecting means along said first optical axis for receiving and redirecting said infrared light received therefrom in a first predetermined direction toward the retina of an eye being examined that is positioned along a third optical axis, and for passing therethrough a portion of said redirecting infrared light that has been reflected from the retina of said eye back along said third optical axis in a second direction that is opposite the aforesaid first predetermined direction;

means spatially disposed between the aforesaid first and second mentioned receiving, redirecting, and passing means and along said first optical axis for directing the aforesaid infrared and red lights onto the pupil of said eye;

means spatially disposed downstream from said second mentioned receiving, redirecting, and passing means and along said third optical axis for receiving, redirecting, and passing therethrough portions of the aforesaid infrared light reflected from the retina of said eye;

means spatially disposed downstream from said last mentioned receiving, redirecting, and passing means and along said third optical axis for converting said retina reflected infrared light to a light image proportional thereto that would be visible to the human eye;



whereby the eye to be examined is permitted by the use of infrared light to attain and maintain full dilation, and will be focused at infinity on the source of said red light and held fixed thereon by the examinee without eye movement during the examination;

means spatially disposed from said first mentioned receiving, passing, and redirecting means and in contiguous disposition with said second optical axis for timely supplying a flash of bright white light thereto, including at least one optical member in said second optical axis between the source of said white light and said first mentioned receiving, passing, and redirecting means, wherein the source of said white light is about one-half the distance from said at least one optical member and the source of said red light, and said first and second mentioned receiving, passing, and redirecting means, said directing means, and said at least one optical member cooperate to collimate said red light and focus said white light on the pupil of said eye;

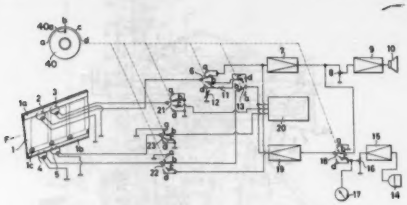
means spatially disposed from said third mentioned receiving, passing, and redirecting means and along a fourth optical axis for timely photographing the light redirected thereby; and

means for selectively actuating the aforesaid white light supplying means and said photographing means simultaneously or separately in response to a predetermined trigger signal.

4,208,108
SOUND MOTION PICTURE PROJECTOR

Takashi Amikura, Hon; Yutaka Kohtani, Yokohama, and Kiyoshi Takahashi, Kunitachi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1977, Ser. No. 858,799
Claims priority, application Japan, Dec. 13, 1976, 51/149545
Int. Cl.[2] G03B *31/02*
U.S. Cl. 352—27 21 Claims



1. A sound motion picture projector capable of using a film strip having a main stripe of magnetic material along the one side edge of the film, a balance stripe of magnetic material along the other side edge of the film and an optically recorded image on the film positioned between the main stripe and the balance stripe and characterizing the motion picture film, comprising;

(a) a housing having a sound recording-reproducing location and an image reproducing location;

(b) a film feed means in the housing for successively transporting the film through the sound recording-reproducing location and the image reproducing location;

(c) a sound recording-reproducing means in the housing, said means including:

a first sound recording-reproducing magnetic head means for recording a sound signal on the main stripe and reproducing the sound signal recorded on the stripe, said first head means being arranged at a position opposite to the main stripe of the film when the film passes through the sound recording-reproducing location;

a demagnetizing head means for magnetically deleting the sound signal recorded on the main stripe, said demagnetizing head means arranged upstream of the first head means and in alignment therewith along the path taken by the main stripe of the film;

a second sound recording-reproducing magnetic head means for recording a sound signal on the balance stripe and reproducing the sound signal recorded on the stripe, said second head means being arranged at a position opposite to the balance stripe of the film passing through the sound recording-reproducing location;

a sound recording-reproducing control circuit means for operating the first and the second head means and the demagnetizing head means, said control circuit means having a signal output means for delivering a demagnetizing head operating signal to the demagnetizing head;

a first signal converting means for converting the sound signal reproduced by the first and the second head means into an audible signal through the control circuit means; and

a second signal converting means for converting audible sound into an electrical signal to be delivered into the first head means through the control circuit means;

(d) a selector means for selecting the modes of the sound recording-reproducing means in various ways, said selector means including:

a plural number of switches for switching the electrical circuit in the control circuit means; and

an operation means operatively coupled with the plural number of switches for operating the switches from outside of the housing, said operation means being selectively settable into the following modes of the projector:

(1) a first mode in which the first head means of the control circuit means is controlled to be able to reproduce a sound signal while the demagnetizing means and the second head means are disabled, and the first sound signal recorded on the main stripe is reproduced by the first head means and is made hearable by the first signal converting means;

(2) a second mode in which the first head means is able to reproduce the sound signal, the second head means is enabled to record while the demagnetizing head is non-operative, the first sound signal recorded beforehand on the main stripe is reproduced by the first head means and is made hearable by the first signal converting means and applied to the second head means to be recorded on the balance stripe;

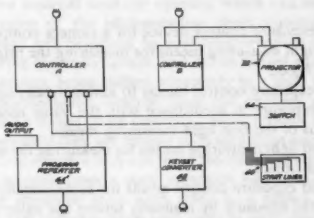
(3) a third mode in which the first head means is controlled to be able to record, the output of the signal output means is able to enter an input to the demagnetizing head and the second head means is able to reproduce, and the first sound signal recorded on the balance stripe is reproduced by the second head means and is made hearable by the first signal sound converting means, and the audible sound is recorded by the second sound converting means and the first head means on the portion from which the first sound signal on the main stripe has been deleted;

(4) a fourth mode in which the first head means is able to record, the second head means is able to reproduce, while the demagnetizing head is non-operative, and the first sound signal recorded on the balance stripe is reproduced by the second head means and is made hearable by the first signal sound converting means and simultaneously the audible sound is recorded on the main stripe overlapping the first sound signal on the main stripe by means of the second signal sound converting means and the first head means.

4,208,109
SELECTIVE REAL ESTATE DISPLAY SYSTEMS

Gary L. Hinote, 1413 SE. 47th Ter., Cape Coral, Fla. 33904

Filed Oct. 2, 1978, Ser. No. 947,754
Int. Cl.[2] G03B *31/00, 21/22*
U.S. Cl. 353—15 7 Claims



1. A selective real estate display system utilizing a multi-slide projector provided with substantial number of slides comprised of a sequential arrangement of groups of slides, a start switch, a multi-cartridge tape deck providing one cartridge for each group of slides, a keyset converter for selecting an individual group of slides; and first and second controllers to position and start a selected group, to select a cartridge providing oral comments coordinated with the selected group, and to individually advance the slides of the group in unison with the coordinated commentaries on the tape cartridge, the display system comprising,

an enclosed chamber formed by a pair of opposed side walls, front and back walls, a floor and a roof,

a rear projection screen mounted in said front wall,

a parking area longitudinally disposed in a confronting relation to an outer viewing side of said screen,

a selector box including a plurality of push buttons, positioned for selective operation by a person in a vehicle parked in said parking area, each of the pluralities slides of each of the groups of slides provide picture images of a particular real estate category such as 3 bedroom, 2 bath houses; and the projector and multi-cartridge tapedeck are electronically connected to said push buttons in a manner whereby each group of slides is individually controlled by operation of one particular button for sequential projection of individual slide images of said group of slides onto a rear side of said screen for viewing on said outer side by the occupants of the vehicle with a coordinated commentary from a speaker operably connected to the multi-cartridge tapedeck in a conventional manner.

4,208,110
CAMERA WITH SELECTABLE AUTOMATIC AND MANUAL EXPOSURE CONTROL

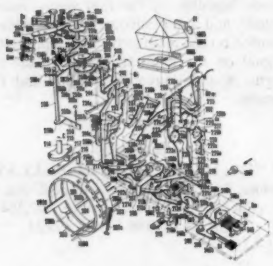
Fumio Ito, Yokohama; Akio Sunouchi, Tokyo; Mutsuhide Matsuda, Yokohama; Ryoichi Suzuki, Kawasaki; Takashi Uchiyama, Yokohama, and Yoshiaki Watanabe, Fujisawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 777,931, Mar. 15, 1977. This application Sep. 18, 1978, Ser. No. 943,356

Claims priority, application Japan, Mar. 19, 1976, 51-30493; Mar. 19, 1976, 51-30494

Int. Cl.[2] G03B 7/00, 17/38, 17/18

U.S. Cl. 354—31 **12 Claims**



1. An exposure control device for a camera comprising;

a first light measuring means for measuring the brightness of the object,

a first exposure control means fo automatically controlling the exposure in accordance with the value measured by means of the first light measuring means,

a second light measuring means for measuring the brightness of the object,

a second exposure control means for automatically controlling the exposure by manually setting the value in accordance with the value measured by means of the second light measuring means,

an electromagnetic actuating means for actuating the first exposure control means,

a mechanical actuating means for actuating the second exposure control means,

a photographic mode change over means, said means bringing the first light measuring means and the electromagnetic actuating means into operative state when the photographic mode is changed over into the automatic exposure photographic mode and bringing the second light measuring means and the mechanical actuating means into operative state when the photographic mode is changed over into the manual photographic mode.

4,208,111
SYNCHRONIZING DEVICE FOR ELECTRONIC PROGRAM SHUTTER

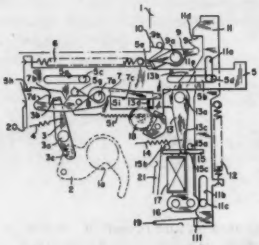
Kiyoshi Kitai; Yukio Morino; Shogo Kato, and Masanori Watanabe, all of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Filed Mar. 9, 1979, Ser. No. 18,914

Claims priority, application Japan, Mar. 10, 1978, 53/28131

Int. Cl.[2] G03B 7/16, 9/08

U.S. Cl. 354—33 **3 Claims**



1. A synchronizing device, for an electronic program shutter having sectoral shutter blades functioning in varying both the aperture and the exposure time corresponding to the brightness of the field, comprising a sectoral shutter blade control lever which is oscillatable and capable of opening and closing the sectoral shutter blades and is normally urged in the direction that the sectoral shutter blades keep the aperture closed, a driving member which travels in one direction according to the shutter release operation, an actuating lever rotatable about a shaft fitted on said driving member and interlocked with said sectoral shutter blade control lever for controlling the operation of said sectoral shutter blade control lever to actuate said sectoral shutter blades, an electromagnetic device which is unmagnetized at the exposure completion signal given by an exposure control circuit, an armature which operates said actuating lever when the attraction by said electromagnetic device is cancelled, and a switching device which is actuated synchronously with the exposure completion operation, characterized in that both or either one of the engaging parts of said armature and said actuating lever is formed so that said switching device is closed about the maximum aperture of the exposure corresponding to the brightness of the field.

4,208,112
PHOTOGRAPHIC CAMERA ACCESSORY

William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 4, 1979, Ser. No. 45,062

Int. Cl.[2] G03B 7/08

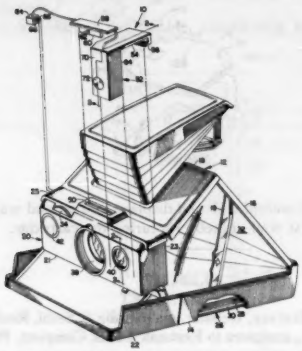
U.S. Cl. 354—42 **8 Claims**

1. A photographic camera accessory for adapting a camera for use with a film having a speed faster than the speed of the film for which the camera is designed wherein the camera is of the type which has an exposure control system including means for automatically measuring scene brightness and regulating the amount of exposure received by the film so that the film is properly exposed for its given speed, said accessory comprising:

light detecting means for receiving light from the scene and providing an output signal having an electrical characteristic which varies in a predetermined manner in accordance with scene brightness; and

scene brightness simulating means structured to cooperate with said light detecting means for providing to the camera scene brightness measuring means an artificial source of illumination having a simulated brightness which is always greater than the actual scene brightness by a predetermined factor which corresponds to the difference

between the film speed for which the camera exposure control system is designed and the faster speed of the film with which the camera is used so that the camera exposure control system, when operative, regulates exposure in accordance with the simulated scene brightness rather



than the actual scene brightness thereby reducing exposure whenever said accessory is operatively associated with the camera, said factor being selected so that the reduced exposure delivered by the camera is appropriate for the faster speed film.

4,208,113

PHOTOGRAPHIC CAMERA

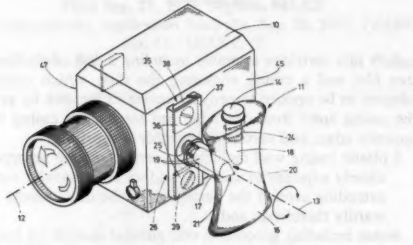
Claus Prochnow, Brunswick, Fed. Rep. of Germany, assignor to Rollei-Werke Franke & Heidicke, Brunswick, Fed. Rep. of Germany

Filed Jun. 19, 1979, Ser. No. 50,112

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1978, 2828779

Int. Cl.[2] G03B *17/38, 29/00*

U.S. Cl. 354—82 **27 Claims**



1. A photographic camera, particularly a still camera, comprising a housing provided with a lens having an optical axis; a shutter release element in said housing; a handgrip mounted on said housing turnable about a pivot axis transverse to said optical axis and including one part extending along said pivot axis and another part extending in a direction transverse to said pivot axis; a trigger button mounted in said other part for sliding movement in said direction; and means for coupling said trigger button with said shutter release element to actuate the latter in response to said sliding movement of the former, comprising a first pin slidable in said one part lengthwise of said pivot axis from a rest position to an operating position in which it operates said shutter release element, a second pin slidable in said other part together with said button in said direction from a starting position towards and away from said first pin, and cooperating portions on said pins engageable with one another in response to sliding of said second pin towards said first pin and operative for imparting to said first pin upon such engagement a sliding movement to said operating position.

4,208,114

PHOTOGRAPHIC CAMERA

Fumio Ito, and Mutsunobu Yazaki, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

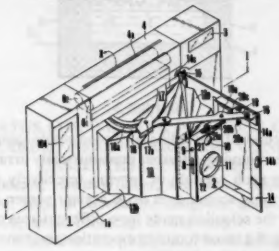
Division of Ser. No. 812,846, Jul. 5, 1977, Pat. No. 4,122,472.

This application Jun. 28, 1978, Ser. No. 919,769

Claims priority, application Japan, Jul. 7, 1976, 51-80539; Apr. 28, 1977, 52-49126

Int. Cl.[2] G03B *17/04, 17/52*

U.S. Cl. 354—86 **2 Claims**



1. An instant picture camera which uses a cassette housing photosensitive sheet material, which has a means storing developer agent and forms a visible image after the developing process by said agent in the storing means after exposure, comprising:

(a) a rear housing having a cassette housing chamber into which said cassette is loaded;

(b) a front housing having a device which can selectively expose the photosensitive material in the rear housing;

(c) a photosensitive material advancing means which advances the material after exposure, processing the material being exposed in a course of said advancing by said developer agent;

(d) an upper cover to open and close an opening of the cassette housing chamber; wherein said cover has a photosensitive material send out opening which can make the discharging of the photosensitive sheet material being processed and advanced by said photosensitive material advancing means to outside, and can be shifted against the rear housing, being shifted selectively to a state wherein the photosensitive material send out opening and the advancing means come very close to each other and to a state wherein they are largely separated from each other;

(e) a folding means which can bring the rear housing and the front housing from a state in which said housings are largely separated from each other to a folded state in which said housings come very close to each other and at least a portion of the front housing is contained in the rear housing;

(f) a bellows which shields light in a space formed between the rear housing and the front housing, wherein said bellows can be expanded and shrunk in an association with said folding means, and

(g) an opening and closing cover which covers the surface of the front housing exposed to outside out of the rear housing when the front housing is folded in the rear housing, wherein said cover is mechanically linked with the above mentioned upper cover and the folding means, and the shifting of the upper cover and the folding action of the folding means are controlled in an association with the control of said opening and closing cover.

4,208,115

VIEWFINDER SYSTEM WITH FOCUSING SCREEN

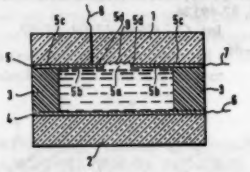
Joachim Proske, Mascherode, Fed. Rep. of Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Fed. Rep. of Germany

Continuation of Ser. No. 736,705, Oct. 29, 1976, abandoned. This application Feb. 21, 1979, Ser. No. 13,643

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1975, 2549148

Int. Cl.² G03B *13/24*

U.S. Cl. 354—201 **1 Claim**



1. The method of providing a photographic camera with a focusing screen having different concentrically arranged areas of the screen each capable of serving selectively either as a ground-glass type screen area or as a clear screen area, independently of the selection made for a different area of the same screen during the same focusing operation, said method comprising the steps of providing two transparent bodies with surfaces lying opposite to and slightly spaced from each other and with electrodes facing each other on said surfaces, the electrodes on one of said surfaces being divided on a concentrically arranged area pattern, providing in the space between such surfaces liquid crystal material of a character such that when a sufficient electric potential is applied to electrodes facing each other the liquid crystal material between such facing electrodes will become turbid and such material will be clear and non-turbid in the space between facing electrodes to which said potential is not applied, applying said electric potential to an electrode on one of said surfaces having an area covering only part of the area of such surface and to a facing electrode covering the entire area of the opposite surface so that said material between such electrodes will become turbid and said part of the area will act similarly to a ground-glass focusing screen, while omitting the application of said potential to an electrode on a different area of such surface so that the material opposite said electrode on the different area will be clear and non-turbid and that the different area will act as a clear focusing screen while the earlier mentioned area to which electric potential is applied is acting as a ground-glass focusing screen.

4,208,116

METHOD AND APPARATUS FOR OPENING A FILM CARTRIDGE

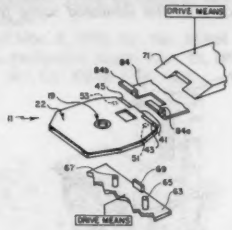
John E. Morse, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 25, 1978, Ser. No. 945,166

Int. Cl.² B23P *19/04*; G03B *17/26*

U.S. Cl. 354—275 **17 Claims**

1. A cartridge adapted to be opened by a cartridge opener, said cartridge comprising first and second generally planar and parallel walls sealed together to enclose a film member in a substantially light-tight film chamber located between and defined by portions of interior surfaces of said walls, said first wall having a passage spaced beyond the peripheral edge of said film member and directed toward said interior surface of said second wall for receiving force-applying means of the cartridge opener therethrough to apply force to said interior



surface of said second wall and displace said second wall relative to said first wall, thereby rupturing the cartridge.

4,208,117

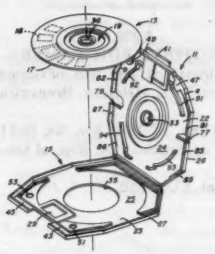
FILM PACKET

Frederick W. Harvey, Webster, and Gurdip S. Sethi, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 4, 1978, Ser. No. 948,367

Int. Cl.² G03B *17/26*

U.S. Cl. 354—275 **8 Claims**



1. A thin cartridge assembly including a disk of photosensitive film and a casing enclosing the disk, which casing is adapted to be opened to provide access to the disk by prying the casing apart from one edge and tearing the casing to its opposite edge; said cartridge assembly comprising:

a plastic casing wall including a central section superposed closely adjacent to said disk and an outer annular section extending around the periphery of the disk radially outwardly therefrom; and

means including grooves in said annular section for leading tearing of said casing along two paths extending oppositely around the periphery of said disk from the one casing edge to its opposite edge.

4,208,118

MOISTURE AND DUST PROOF SEALING ARRANGEMENT FOR CAMERA BODY REAR COVER

Fumio Urano, Omiya, and Junji Umetsu, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1978, Ser. No. 889,081

Claims priority, application Japan, Mar. 28, 1977, 52/37545; Mar. 29, 1977, 52/38047

Int. Cl.² G03B *17/02, 17/36*

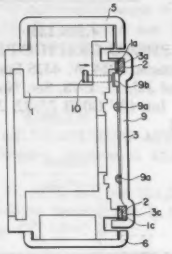
U.S. Cl. 354—288 **5 Claims**

1. In a camera including a camera body defining a film compartment on the rear side thereof, and a rear cover hinged

on one end to one end of the camera body and having latching means on its other end cooperable with closure means on the other end of the camera body, improved means for sealing the film compartment against the incursion of dust and moisture when the rear cover is closed, characterized, by:

(a) continuous mating grooves and edge flanges on the camera body and on the inside of the rear cover, respectively, or vice versa, surrounding the perimeter of the film compartment,

(b) a continuous, deformable, closed-loop sealing gasket



disposed in said grooves and formed of a foamed, viscoelastic, independent closed cell material, said gasket being compressively sandwiched between the camera body and closed rear cover to thereby seal the film compartment against dust and moisture,

(c) a spring biased interlocking pin for an automatic film counter restoring mechanism slidably mounted in the camera body inside of the film compartment perimeter and extending outwardly from the camera body, and

(d) means on the inside of the rear cover for operatively engaging and depressing said pin when the cover is closed.

4,208,119

PHOTOGRAPHIC FILM DEVELOPER

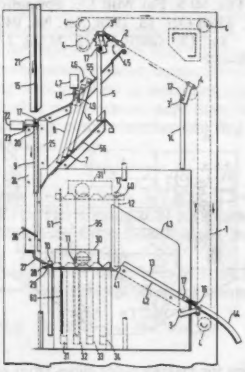
Harry A. H. Spence-Bate, 1 Cheam Pl., Morley, Western Australia 6062, and William W. Hargreaves, 11 Smarts Crescent, Cronula, New South Wales 2230, both of Australia

Filed Sep. 27, 1978, Ser. No. 946,425

Claims priority, application Australia, Sep. 30, 1977, PD1895

Int. Cl.[2] G03B *3/10*

U.S. Cl. 354—322 **21 Claims**



1. A developer for sheet film laminae comprising a plurality of film holders each adapted to hold a film lamina, tanks for developing, fixing, and washing the film adapted to receive said film holders, releasing means for holding a said holder at a film receiver station for reception of a said lamina and releasing said holder after feeding a said lamina into a said holder, means for moving the said holder holding the lamina from the film receiving station to said tanks, means for removing said film holder holding the lamina from the tanks and positioning said holder at a release station for capture by a conveyor, release means at said release station for releasing the film from the holder, a conveyor between said release station and a film holder store feeding said receiving station, said conveyor being adapted to engage and capture said holder after release of the film to return the holder to the film holder store, said store having retaining means allowing release of a holder to the receiving station.

4,208,120

APPARATUS FOR WINDING PORTIONS OF FILMS ONTO TAKEUP REELS WHICH ARE CONFINED IN CASSETTES OR THE LIKE

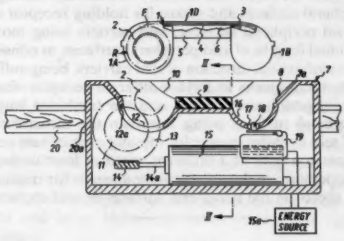
Alois Zachmeier; Horst Wildner, and Heinz Kölbl, all of Munich, Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Oct. 27, 1977, Ser. No. 845,885

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1976, 2649675

Int. Cl.[2] G03B *1/18*

U.S. Cl. 354—354 **15 Claims**



1. Apparatus for winding photosensitive webs onto rotary takeup devices the web-receiving portions of which are installed in the interior of containers of the type wherein successive increments of the web advance past a light-admitting opening on their way toward the takeup device and the opening is located at a predetermined distance from the takeup device, comprising means for supporting a container not located in a picture-taking apparatus so that the web in the thus supported container can be advanced independently of the film transporting mechanism of such picture-taking apparatus, and in a predetermined position in which a portion of the thus supported container is exposed and accessible; a rotary driving element mounted in said supporting means; sealing means mounted in said supporting means at said predetermined distance from said driving element to prevent entry of light into the opening of a container which assumes said predetermined position and whose takeup device is placed into engagement with and is rotated by said driving element in a direction to advance the web toward and to convolute the web on the takeup device; and means for rotating said element upon engagement with a takeup device so as to continuously convolute the web on such takeup device until the convoluting operation is completed.

4,208,121

APPARATUS FOR DEVELOPING LATENT IMAGES OF X-RAYED OBJECTS ON DIELECTRIC RECEPTOR SHEETS

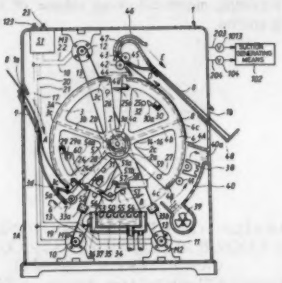
Jürgen Müller, Munich, Fed. Rep. of Germany, assignor to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Jun. 28, 1978, Ser. No. 919,908

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1977, 2730841

Int. Cl.[2] G03G *15/10*; G03D *3/04, 3/08*

U.S. Cl. 355—10 **19 Claims**



1. In an apparatus for processing receptor sheets for latent images, especially for developing latent images of X-rayed objects on dielectric receptor sheets, the combination of a sheet transporting unit including a plurality of carriers each of which constitutes a segment of a cylinder having a predetermined radius and is mounted for individual movement in a common path for all of said carriers, said carriers having convex peripheral surfaces and means for holding receptor sheets against said peripheral surfaces, said carriers being movable, the individual lengths of said peripheral surfaces, as considered in the circumferential direction of said carriers, being sufficient for said holding means to hold a different receptor sheet on each of said peripheral surfaces, and the combined length of said peripheral surfaces being less than the circumferential length of said cylinder; means for moving each of said carriers in said common path at a different speed at least during one phase of operation of the apparatus; and means for treating the receptor sheets on the peripheral surfaces of said carriers.

4,208,122

REPRODUCTION APPARATUS COMPRISING SORTING DEVICE

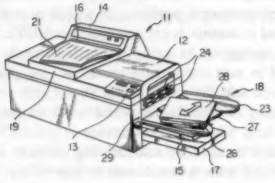
Minoru Iwamoto; Toyoo Okamoto, and Shigeru Mita, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 20, 1978, Ser. No. 962,210

Claims priority, application Japan, Nov. 28, 1977, 52-141655; Dec. 8, 1977, 52-147384

Int. Cl.[2] G03G *15/00*; G03B *27/58*

U.S. Cl. 355—14 R **17 Claims**



1. A reproduction apparatus including a reproduction machine and sorting means, the reproduction machine reproducing original documents on sheets and discharging the sheets onto the sorting means, the sorting means having means movable so as to stack the sheets in a first position or a second position on the sorting means and being toggled between the first and second positions in response to electrical sort signals, characterized by comprising:

control means for producing a sort signal after termination of a reproduction operation by the reproduction machine when a predetermined operation is performed within a predetermined length of time after said termination.

4,208,123

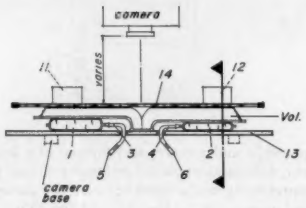
PHOTO GRAPHIC-PLANE

Stanley W. Stevenson, 3054 W. 4325 South, Roy, Utah 84067

Filed Jul. 27, 1978, Ser. No. 928,541

Int. Cl.[2] G03B *27/32, 27/62*

U.S. Cl. 355—25 **4 Claims**



1. A pneumatic system for raising or lowering material such as books, volumes or documents and other materials being photographed or microfilmed at a level plane including side-by-side disposed inflatable and deflatable air containers to elevate and lower respective book-half subject matter disposed thereover and being filmed, a transparent cover disposed over said air container, and a system of air-communication means to facilitate and control the passage of air thru inflation or deflation in, out of or thru said system to accomplish the leveling objective.

4,208,124

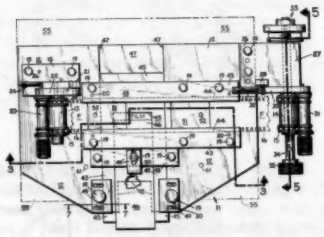
APPARATUS FOR MAKING COLOR SLIDES FROM BLACK-AND-WHITE ART USING REGULAR AND COLOR FILM ROLLS

Robert W. Fox, 90 S. Fox Mill La., Springfield, Ill. 62707

Filed Oct. 10, 1978, Ser. No. 949,500

Int. Cl.[2] G03B *27/32, 27/52, 27/62*

U.S. Cl. 355—32 **10 Claims**



1. A device for making color slides from roll-film negatives photographically made from black-and-white art-work, said device comprising: a platform-like horizontally disposed base having a medially located aperture for passing light from a color-controllable light box of known construction upwardly through said aperture, means for firmly positioning a frame of

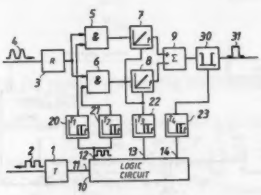
a developed-film strip over said aperture so as to be centered in the view field of a superposed known-type camera loaded with color-slide film, a pair of manually movable east-west-movable dark-surfaced flat masking plates located in a plane close to one surface plane of said frame, a pair of manually movable north-south-movable dark-surfaced flat masking plates located in another plane close to the other surface plane of said frame, and parallel plate-edge-engaging guide means for firmly holding said pairs of masking plates against movements other than their desired east-west and north-south movements, whereby different east-west and/or north-south areas of the color-slide frame being photographically produced can be sequentially exposed through said developed-film frame to different colors from said light box.

4,208,125

CLOUD ALTITUDE MEASURING APPARATUS

Bernt Ling, Vesteras, Sweden, assignor to ASEA Aktiebolag, Vesteras, Sweden

Filed May 31, 1978, Ser. No. 911,229
Claims priority, application Sweden, Jun. 3, 1977, 7706529
Int. Cl.² G01C *3/08*
U.S. Cl. 356—5 **4 Claims**



1. Cloud altitude measuring means, in which the measurement is carried out step-by-step and the measuring distance is changed by a predetermined value for each measurement step, comprising a signal emitter for emitting a series of light pulses for each measurement step; a signal receiver for receiving echo signals generated by the emitted light pulses upon reflection against an object, the reflected light pulses including noise; first and second integrators for integration of echo signals and noise received in respective first and second time intervals, said first and second integrators integrating reflected light pulses; a summation device for determining the difference between the integrated signal outputs from said first and second integrators; a controllable level-sensing signal evaluating device for emitting a signal if the difference between said integrated signal outputs exceeds a predetermined value; means for controlling said signal evaluating device to emit an indicating signal when a number of consecutive measurement steps have been measured; and said controlling means resetting said first and second integrators to zero.

4,208,126

SYSTEM FOR DETECTING FOREIGN PARTICLES OR VOIDS IN ELECTRICAL CABLE INSULATION AND METHOD

Peter K. Cheo, and Arnold J. Cantor, both of West Hartford, Conn., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed May 24, 1978, Ser. No. 909,254
Int. Cl.² G01N *21/16, 21/32*
U.S. Cl. 356—51 **22 Claims**

1. A system for detecting foreign particles or voids in the outer insulation jacket of an electrical cable, said insulation jacket being cylindrical in cross-sectional configuration and constructed of a material having a known index of refraction and an absorption co-effeicient sufficient to pass electromagnetic radiation of a given wavelength and said foreign particles and voids being of sizes within a predetermined range, said system comprising;

(a) means for producing a laser beam of electromagnetic radiation at said given wavelength;

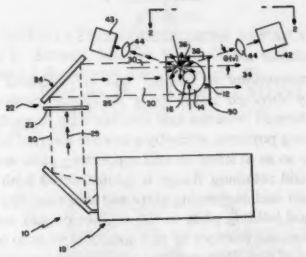
(b) means for directing said beam into said insulation jacket along a path incident to and at a predetermined orientation with said cable such that

(i) any portion of said beam which passes through said insulation jacket unobstructed by voids or foreign matter within said jacket does so along predictable non-impinging paths, and

(ii) any portion of said beam which impinges one of said foreign particles or voids as it passes through said jacket is scattered thereby along predictable scattering paths including paths different than said non-impinging paths;

(c) a refractive index matching arrangement for minimizing the refraction of said beam as the latter initially passes into and out of said insulation jacket, said arrangement including

(i) a solid body having a planar frontside, a backside, opposite ends and the same index of refraction as said insulating jacket, said body also including an open



ended cylindrical passage which is slightly larger than said jacket and which extends from one of said opposite ends to the other parallel with said planer frontside, said body being adapted for positioning concentrically around said jacket such that said jacket and block together define an annular space there between and such that the frontside of said block presents a normal surface to said beam before the latter enters said insulation jacket,

(ii) a liquid located within and filling said annular space, said liquid having an index of refraction approximately equal to that of said insulating jacket and an absorption co-efficient approximately equal to that of said jacket at said given wavelength, and

(iii) means for sealing said liquid within said annular space; and

(d) means for detecting electromagnetic radiation of said given wavelength, said means being positioned in alignment with at least one of said different scattering paths, whereby to detect any of said scatter electromagnetic radiation which is directed along said last-mentioned scattering path.

4,208,127

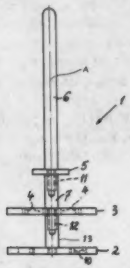
CUVETTE HOLDER

Wolfgang Hufenreuter, Müllheim, Fed. Rep. of Germany, assignor to Helma GmbH & Co. KG, Müllheim, Fed. Rep. of Germany

Filed Feb. 17, 1978, Ser. No. 878,744
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1977, 2707231
Int. Cl.² G01N *21/00*
U.S. Cl. 356—244 **10 Claims**

1. A holder for cleaning, drying and storing of polygonal cross-section cuvettes, said holder comprising in combination a

supporting plate having an axis and arranged so that a cuvette stands by its bottom end on said support plate; a plate-shaped retaining flange axially spaced from and located generally parallel to said supporting plate, so that the cuvette standing on said supporting plate is engaged at its top end by said retaining flange, said retaining flange being provided with a handle coaxial to and connected with said supporting plate; and a holding plate located axially between and parallel to said supporting plate and said retaining flange and connected with said handle, said holding plate being formed with a plurality of apertures each having a periphery formed with a plurality of



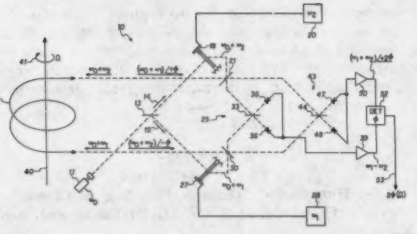
notches corresponding in number and arrangement to the longitudinally directed edges of a polygonal cross-section cuvette and formed between said notches with inwardly concave connecting portions, whereby a cuvette inserted in one of said apertures so as to stand on said supporting plate and to be retained by said retaining flange is unobstructed both in the region between said supporting plate and said retaining flange and within said holding plate in the regions of said inwardly concave connecting portions of said apertures so as to prevent contamination of and allow sufficient access of cleaning means to the cuvette.

4,208,128

INTERFEROMETER GYRO USING HETERODYNE PHASE DETECTION WITHOUT SEVERE LIGHT SOURCE COHERENCE REQUIREMENTS

David E. Thompson, Placentia; Dean B. Anderson, Whittier; Rudolf R. August, Laguna Beach, and Shi-kay Yao, Brea, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 23, 1978, Ser. No. 936,678
Int. Cl.[2] G01B 9/02; G01P 9/00
U.S. Cl. 356—350 **13 Claims**



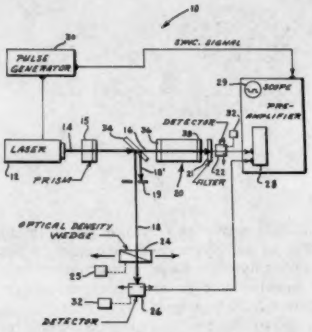
1. An interferometer gyro, comprising:
a light source;
means for modulating one portion of said light source with a first frequency;
means for modulating another portion of said light source with a second frequency;
an optical path enclosing an area the rotation of which about an axis of sensitivity is desired to be measured;
means for directing said portion modulated with said first frequency through said light path in one direction;
means for directing said portion modulated with said second frequency through said light path in an opposite direction;
means for combining said two portions to constitute a combined reference signal;
means for combining after traversing said light path said two portions to constitute a combined rotation sensing signal; and
means for determining the phase difference between said combined reference signal and said combined rotation sensing signal.

4,208,129

SENSITIVE LASER SPECTROSCOPY MEASUREMENT SYSTEM

Donald J. Spencer, Torrance, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 30, 1978, Ser. No. 921,137
Int. Cl.[2] G01J 3/46, 3/42
U.S. Cl. 356—425 **10 Claims**



1. A sensitive laser spectroscopy measurement system comprising means for producing a beam of radiant energy, means operably connected to said radiant energy producing means for internally controlling the modulation of the beam of radiant energy produced thereby, means in optical alignment with said beam of radiant energy for producing a substantially totally vertically polarized beam of radiant energy, means in optical alignment with said beam of radiant energy for splitting said beam into a probe beam and a reference beam of radiant energy, said probe and reference beams of radiant energy each following different optical paths, the length of each of said optical paths being substantially the same, means in optical alignment with said probe beam of radiant energy for encompassing a medium on which said spectroscopy measurement is to be performed, photovoltaic detection means located adjacent said medium encompassing means and in optical alignment with said probe beam for measuring the intensity of said probe beam, means in optical alignment with said reference beam for altering the intensity of said reference beam, photovoltaic detection means located adjacent said intensity altering means and in optical alignment with said reference beam for measuring the intensity of said reference beam, means attached to both of said photovoltaic detection means to provide two-dimensional transverse movement of both of said photovoltaic detection means relative to both said probe and reference beams for fine tuning to sensitivity peaks of said photovoltaic detection means, and means operably connected to both of said photovoltaic detection means for displaying said intensities of said probe beam and said reference beam whereby the intensity difference between said probe beam and said reference beam

can be observed with extremely high sensitivity on said display means.

4,208,130

METHOD AND APPARATUS FOR OPTICALLY DETECTING DEFECTS IN A TRANSPARENT OBJECT

Jean E. Saconney, Paris, and Theodore Caloyannis, Courbevoie, both of France, assignors to Societe Generale pour l'Emballage, Paris, France

Filed Jan. 20, 1978, Ser. No. 871,096
Claims priority, application France, Jan. 25, 1977, 77 01963
Int. Cl.² G01N *21/02*
U.S. Cl. 356—428 **22 Claims**

1. Apparatus for optically detecting defects in a transparent object which comprises:

a. at least one optical control unit which includes

i. a base,

ii. guide means on a face of the base,

iii. at least two rigid support consoles,

iv. at least one optical assembly comprising optical emitting means and conjugate optical receiving means having preset and fixed focal distances, the optical emitting means being mounted on one of the rigid support consoles, the optical receiving means being mounted on another of the rigid support consoles,

v. a stand for each rigid support console, engaged with the guide means so as to set and fix the orientation of the associated optical emitting or receiving means with respect to the base and so as to allow movement of the associated optical emitting or receiving means in directions parallel and transverse to the face of the base while preventing any change in the orientation of the associated optical emitting or receiving means with respect to the base, the guide means being positioned on the face of the base so that on movement of the optical emitting means and conjugate optical receiving means all displacements of the points of focus of the optical emitting means and conjugate optical receiving means are confined to a single examination plane;

b. means for supporting the optical control unit in position with respect to the object; and

c. means for rotating the object with respect to the optical control unit.

4,208,131

ASPHALTIC CONCRETE PATCH MIXING AND HEATING APPARATUS AND METHOD

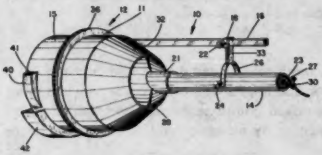
Robert L. Mendenhall, 1770 Industrial Rd., Las Vegas, Nev. 89102

Filed Jan. 23, 1978, Ser. No. 871,351
Int. Cl.² B28C *5/46*
U.S. Cl. 366—7 **25 Claims**

1. Apparatus for heating and mixing asphalt-aggregate composition comprising

a drum, rotatable about an axis, having a mixing chamber with a single enlarged open port, into which a flame and hot gases of combustion are directed and out of which exhaust gases are concurrently vented, and

heating means having a burner nozzle for directing a flame and hot gases of combustion into the approximate center of said port and substantially parallel with the drum axis of rotation;



means for moving said burner nozzle along the axis of drum rotation relative to said drum, and

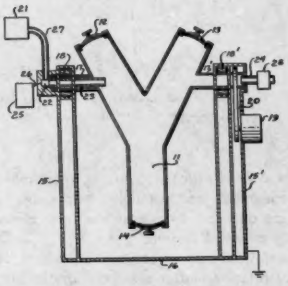
a closable recovery port on the side of said drum and communicating with the interior thereof through which heated composition may be recovered.

4,208,132

ANTISTATIC METHOD AND APPARATUS

Barbara E. Stevens, Mission Viejo, Calif., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jul. 25, 1978, Ser. No. 927,782
Int. Cl.² B01F *13/02, 13/06*
U.S. Cl. 366—101 **28 Claims**



1. In a method for processing particles of dried animal body fluid during which said particles generate static charge, the improvement comprising contacting said particles with an ionized gas.

4,208,133

INJECTION CARTRIDGE

Hans W. Korte-Jungermann, Willich, Fed. Rep. of Germany, assignor to Korte-Jungermann Gesellschaft fur Fassadenbau und Befesstigungstechnik mit beschrankter Haftung, Willich, Fed. Rep. of Germany

Filed Jan. 8, 1979, Ser. No. 1,829
Claims priority, application Fed. Rep. of Germany, Jan. 7, 1978, 2800587; Feb. 25, 1978, 2808230
Int. Cl.² B01F *15/02*
U.S. Cl. 366—130 **16 Claims**

1. An injection cartridge having at least two chambers for holding mixable components and comprising a rigid housing having a moveable injection opening at one end thereof and a moveable mixing rod, a container comprising one of said chambers forming a displacement piston slideable in said housing and positioned at the other end thereof, said container having a sealed opening at the end thereof toward the interior

of said housing and a discharge piston forming the other end of said container and adapted to discharge the contents of said container into said housing when the seal of said opening is removed, whereby the contents of said container may be discharged through said opening into said housing by said discharge piston and mixed with other components by said mixing rod and the mixed components may be expelled through said injection opening by means of said displacement piston.

4,208,134

APPARATUS AND METHOD FOR MIXING MATERIAL

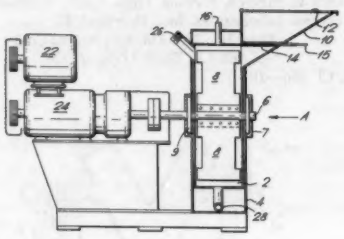
Kenneth F. Whittle, Bridgnorth, England, assignor to Protein Foods (U.K.) Limited, Staffordshire, England

Filed Feb. 4, 1977, Ser. No. 765,790

Claims priority, application United Kingdom, Feb. 19, 1976, 6626/76

Int. Cl.² B01F *5/12, 7/04, 15/02, 15/06*

U.S. Cl. 366—147 **15 Claims**



1. A mixer assembly for batch mixing a treatment agent and a particulate material, said assembly comprising:

(a) a mixing chamber having at least one mixing member rotatably mounted therein,

(b) the mixing member being rotatable at a first, mixing speed of rotation and at a second, discharging speed of rotation greater than said first speed of rotation,

(c) means for rotating the mixing member to mix a batch mixture of particulate material and treatment agent at said first mixing speed without discharging material from the mixing chamber,

(d) said rotating means being effective to operate at said second discharging speed of rotation greater than said first speed of rotation after the mixing of the batch to discharge said batch mixture, and

(e) outlet means being positioned on said chamber to receive material from the mixing chamber when the mixing member is rotated at said second, discharging speed of rotation.

13. A method of mixing material comprising the steps of:

(a) providing an assembly including a mixing chamber having a mixing member, outlet means and means for rotating said mixing member,

(b) rotating said mixing member at a first speed of rotation,

(c) introducing a batch of treatment agent and particulate material to be mixed together to form a treated batch mixture while said mixing member is rotated at said first rotational speed, then

(d) rotating said mixing member at said second higher speed of rotation to discharge the treated batch mixture through said outlet means.

4,208,135

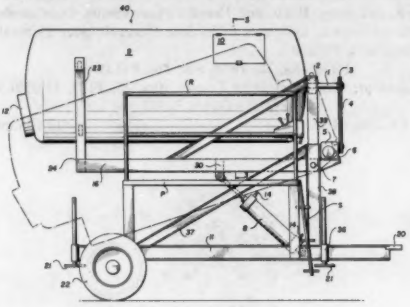
MIXING DEVICE

Manuel J. Bastiao, 5212 Bayou Way, Sacramento, Calif. 95837

Filed Nov. 1, 1978, Ser. No. 956,681

Int. Cl.² B01F *7/08*

U.S. Cl. 366—219 **10 Claims**



1. A mixing device comprising a main framework,

a secondary frame pivotably connected to said main frame,

a mixing tank supported on said secondary frame, said mixing tank having mixing vanes therewithin and a loading door disposed on said mixing tank, and an unloading spout disposed on said mixing tank,

said unloading spout including a hinged lockable cover overlying said spout, an interrupted flange surrounding said spout carried on said mixing tank,

a pair of sheathes straddling the interrupted portion fo said flange,

a link extending from each sheath pivotably pinned together and to said cover, one of said links longer than the other whereby when said longer link is rotated about the pivot area, said sheathes come together at the interrupted portion of the flange and said cover can be opened.

4,208,136

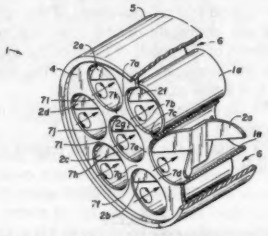
STATIC MIXING APPARATUS

Leonard T. King, Long Beach, Calif., assignor to Komax Systems, Inc., Long Beach, Calif.

Filed Dec. 1, 1978, Ser. No. 965,283

Int. Cl.² B01F *15/00*

U.S. Cl. 366—338 **10 Claims**



5. A stationary material mixing apparatus comprising a conduit having an upstream and a downstream length, a longitudinal axis through said lengths, a chamber extending longitudinally through said lengths opening on said upstream and downstream lengths of said conduit and including said longitudinal axis, a first plurality of mixing elements disposed about the inner periphery of said upstream length of said conduit chamber with each of said elements oriented in the same direction as the other elements and with at least one of said first plurality

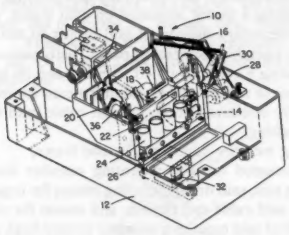
oriented in the same direction as the other of said first plurality of elements disposed about the center region formed by the other of said first plurality of elements disposed about the periophery of said upstream length, at least a second plurality of mixing elements disposed about the inner periphery of said conduit chamber downstream of said first plurality of mixing elements, with each of said elements oriented in the same direction as the other of said elements in said second plurality of elements and with at least one of said second plurality oriented in the same direction as the other of said second plurality and disposed about the center region formed by the other of said second plurality of elements disposed about the periphery of said downstream length, and each of said elements of said second plurality is oriented in a different direction than are the elements of said first plurality.

4,208,137

POSITION SENSING FOR MATRIX PRINTER

Chih H. Liu, San Jose, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Jan. 16, 1978, Ser. No. 869,890
Int. Cl.[2] B41J *3/12, 19/14*
U.S. Cl. 400—124 **13 Claims**



5. In a printer having a carriage reciprocable thereacross, a plurality of solenoids supported from said carriage for driving printing elements in dot matrix printing of characters, means for positioning the dots in precise columns during bi-directional printing, comprising a

timing member secured to said carriage and movable therewith, a

sensor on said printer and operably associated with said timing member, said timing member having indicia indicating dot column positions with carriage home positions comprising a light area at one end of said timing member and a dark area at the other end thereof, said sensor generating pulses from sensing said indicia corresponding to the dot columns of characters to be printed, and sensing the light and dark area home positions of said timing member indicating the direction of movement of said carriage, and

means for delaying the time of movement of said carriage upon detecting said indicia in relation to the response time of said solenoids after actuation thereof.

4,208,138

DOT MATRIX PRINTER HEAD

Hans-Werner Volke, Salzkotten, and Juergen Hilkenmeier, Schloss Neuhaus, both of Fed. Rep. of Germany, assignors to Nixdorf Computer AG, Paderborn, Fed. Rep. of Germany

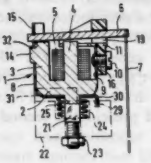
Filed Apr. 10, 1978, Ser. No. 894,723
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1977, 2717077
Int. Cl.[2] B41J *3/12*
U.S. Cl. 400—124 **10 Claims**

1. A dot matrix printer head having a printer head bracket and a plurality of armature magnet units mounted on the printer head bracket, each armature magnet unit comprising:

a U-shaped magnetic yoke having two substantially parallel shanks, each shank having a free end and a leg connecting the other ends of the shanks together,

an elongated armature disposed across the free ends of said shanks, said armature having a printing needle secured to one end,

a U-shaped spring bracket positioned aroung the leg of said magnetic yoke, said spring bracket having one end which



engages the other end of the armature adjacent the free end of one shank and pivots said armature against said last mentioned shank and away from the free end of the other shank, and

a guide piece disposed at least partially around said armature to thereby limit its pivotal movement,

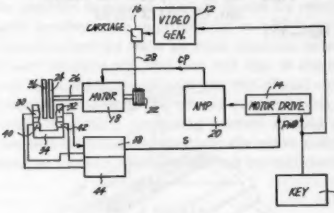
whereby elastic deformation of the spring bracket enables said armature to pivot about said one shank.

4,208,139

CARRIAGE POSITION CONTROL IN A PRINTER OF THE CARRIAGE TRAVELING MODE

Isao Fujimoto, Kunitachi; Takeshi Kasubuchi, and Yuji Sumitomo, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 610,752, Sep. 5, 1975, abandoned. This application Jan. 18, 1978, Ser. No. 870,486
Claims priority, application Japan, Sep. 6, 1974, 49-103310
Int. Cl.[2] B41J *3/04, 19/30, 19/50*
U.S. Cl. 400—126 **7 Claims**



1. In an ink jet system printer which performs an intermittent printing operation by selectively driving a carriage carrying a printing head thereon from a first known position to a second desired position by means of a servomotor in driving relationship thereto in response to a print command input signal generated by the actuation of a key on said key input unit, said key introducing a print character, the improvement comprising:

driving and printing means responsive to the actuation of said key and to the occurrence of a said print command input signal from said key input unit for generating a servomotor drive signal of a fixed level to drive said servomotor and said carriage from said first known position solely in a forward direction to a new position approximating said second desired position and for printing said print character while said driving means is driving said carriage from said first known position to said new position;

detection means responsive to movement of said carriage for generating an analog signal of a first value representive of the location of said carriage in said new position;

said analog signal terminating said printing operation, nullifying said servomotor drive signal thereby terminating the drive of said carriage and holding said carriage stationary in said second desired position pending the actuation of a subsequent key and the occurrence of a subsequent input signal;

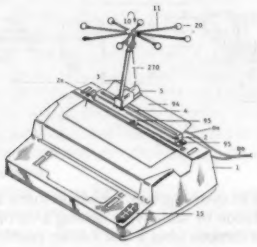
correction means responsive to the completion of each printing operation associated with a given print command input signal and a preselected second value of said analog signal corresponding to said second desired position for precluding the generation of a subsequent fixed level servomotor drive signal and generating a correction signal in response to a deviation of said first value of said analog signal from said preselected second value to cause said servomotor to reposition said carriage to accurately achieve and hold said carriage stationary in said second desired position pending the introduction of a subsequent print character entered via another key on said key input unit to subsequently generate said subsequent input signal thereby driving said carriage from said second desired position solely in a forward direction to another new position approximating a third desired position and printing said subsequent print character while said driving means is driving said carriage from said second desired position to said another new position.

4,208,140

AUTOMATED TYPEWRITER ATTACHMENT

Ralph E. Bucknam, Crescent Beach Dr., Huntington, N.Y. 11743

Filed May 5, 1978, Ser. No. 902,927
Int. Cl.² B41J *23/02*
U.S. Cl. 400—171 **7 Claims**



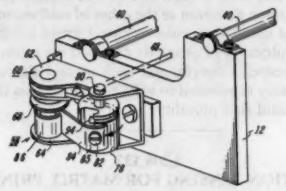
3. A type element installation and removal mechanism for use with ball-type elements of a single element typewriter having a grooved typing element support stud which is gripped by a gripping device on a ball element when in operative position, comprising a unitary ball support member having means thereon for grasping and withdrawing the ball element from operative position, including a projecting structure forming an integral part of said unitary ball support member one portion of which is operative for effecting release of said gripping device to permit such withdrawal, another portion of said projecting structure being operative when the ball element in the grasp of the ball support member is moved toward the stud by the ball support member to actuate said gripping device for effecting said gripping of the stud to insert the ball element thereon.

4,208,141

SERIAL PRINTER WITH CABLE TENSIONING APPARATUS

Brian E. Jagger, Union City, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 19, 1978, Ser. No. 943,905
Int. Cl.² B41J *19/00*
U.S. Cl. 400—335 **1 Claim**



1. In a serial printer comprising a frame, a platen mounted on said frame for rotation about its axis, a carriage assembly having a printing member supported thereon, said carriage assembly being supported for movement along a printing path adjacent said platen, a motor mounted on said frame, means for converting the rotary motion of said motor to movement of said carriage assembly along said printing path, said converting means including a cable mounted at either end on said frame, the improvement comprising tensioning means for maintaining a substantially constant tension on said cable, said tensioning means comprising:

a mounting member connected to said frame;

a drum mounted on said mounting member for rotation about its axis, said drum including means for engaging and holding said cable end therein, and means for engaging a side wall of said mounting member to limit both clockwise and counterclockwise rotatability of said drum;

a resilient spring of predetermined length having one end connected to said drum and a second normally coiled end; and

guide means including a first portion for engaging the normally coiled end of said spring to act as a guide for uncoiling movement of said normally coiled end during rotation of said drum, and a second portion about which a segment of said cable may be wrapped.

4,208,142

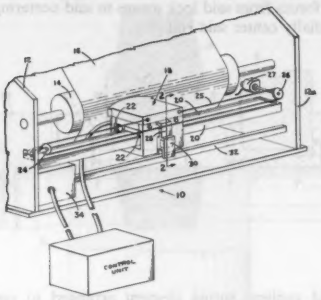
PRINT HEAD LOCATING UTILIZING SONIC TECHNIQUES

Mosi Chu, Setauket, N.Y., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 30, 1978, Ser. No. 965,089
Int. Cl.² B41J *19/00*
U.S. Cl. 400—320 **6 Claims**

3. A printer comprising: platen means for supporting a record medium; a print head assemblage, means for mounting said print head assemblage longitudinally along a path parallel to said platen means, said print head assemblage including printing means operable in response to a control signal for striking said platen means and magnetic means for generating a magnetic field; an elongated sonic cable means extending along another path parallel to said platen means and disposed such that for each position of said print head assemblage a region of said member is under the influence of a magnetic field generated by said magnetic means such that, in the region of said member under influence of a magnetic field generated by said magnetic means, a sonic pulse is launched from that region to one end of said sonic cable means; measuring means for measuring the time required for such a sonic pulse to travel from said region to said end; and control signal emitting means for emitting a control signal while said print head assemblage is

moving to said printing means when said measuring means measures a time directly related to a desired position of said



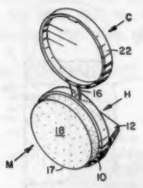
print head assemblage along the path parallel to said platen means whereby indicia is recorded on-the-fly.

4,208,143

EMBOSSED SEAL MARKING DEVICE

Alvin Nored, 201 S. Pierce St., Burnet, Tex. 78611

Filed Apr. 4, 1978, Ser. No. 893,504
Int. Cl.[2] B43K *23/00*; B65D *41/18, 85/28*
U.S. Cl. 401—98 **1 Claim**



1. An embossed seal marking device for marking the raised portions of the seal to make the seal visible for photocopying, comprising:

a handle means having a cylindrically shaped wall portion which is integrally formed with a circular top portion and a hand grip integrally formed on the upper surface of the top portion;

said handle means including an extension tab integrally formed with the cylindrically shaped wall portion and having a locking groove which provides a catch;

a hinge member integrally formed with the cylindrically shaped wall portion opposite the extension tab and connected with a cylindrically shaped cover member having a catch opposite the hinge member for latching with the locking groove of the extension tab;

a marking member formed of marking material which is erasable secured with said handle means;

said marking member being in the shape of a disc having a flat planar marking surface and formed of a rigid, non-resilient marking material and having a hardness such that rubbing engagement of the flat planar marking surface with the raised portions of the seal will transfer some of the marking material to the raised portions of the embossed seal to make the seal visible for photocopying;

said marking member having a circular periphery defining the perimeter of the flat planar marking surface; and

the handle member is secured with the marking member opposite the marking surface and cylindrically shaped wall portion does not extend below the marking surface providing no spacing of the marking surface above the non-emobossed portions of the seal so that the marking surface will engage slightly raised portions of the seal without any interference; and

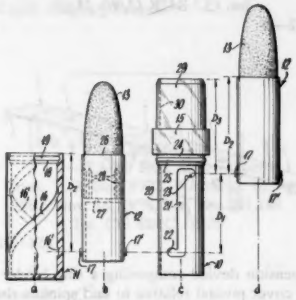
the said marking material is a carbon composition in a suitable binder to form a rigid non-resilient marking material.

4,208,144

COSMETIC APPLICATOR WITH TRANSPARENT CONTAINER PORTION

Eric J. Idec, Madison; Edward F. Klimeck, Waterbury, and Eric A. Hultgren, Westport, all of Conn., assignors to Eyelet Specialty Co., Inc., Wallingford, Conn.

Filed Apr. 3, 1979, Ser. No. 26,755
Int. Cl.[2] B43K *5/12*
U.S. Cl. 401—192 **14 Claims**



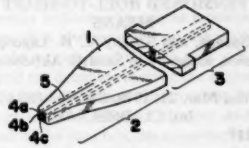
1. In a container of the variety in which a carrier cup adapted to support cosmetic or the like substance at one end has cam-follower tracking engagement with axial propulsion cams of inner and outer rotatable tubular members, the outer tubular member being open at one end and having a cupped base closing its other end, and the inner tubular member being a sleeve including a portion projecting beyond the open end of said outer member to provide manual access for relative rotation of said members, the improvement in which said carrier cup is characterized by such an axial distance between the cam-follower location and said one end that in the retracted position of said carrier cup (a) said one end of said carrier cup is at substantially the open end of said outer member, and (b) the manually accessible projecting portion of said sleeve is translucent and enshrouds substantially the entire usable length of cosmetic or the like substance carried by said carrier cup.

4,208,145

NIB FOR WRITING INSTRUMENTS

Daisaburo Azuma, Yashio, Japan, assignor to Pentel Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1978, Ser. No. 967,875
Claims priority, application Japan, Dec. 17, 1977, 52-170377[U]; Jun. 23, 1978, 53-86227[U]; Aug. 14, 1978, 53-111371[U]; Nov. 28, 1978, 53-163695[U]
Int. Cl.[2] B05C *21/00*
U.S. Cl. 401—196 **15 Claims**



1. A nib for a writing instrument wherein said instrument

comprises a nib holder, a tubular shroud and an ink reservoir within said tubular shroud, said nib being plate-like and comprising therein a plurality of capillary ink feeding channels throughout the entire length of said nib and a split at a tip portion thereof, said capillary ink feeding channels being connected to one another at said tip portion by means of the split when writing pressure is applied to said nib.

4,208,146

SUSPENSION DEVICE FOR RING BINDERS

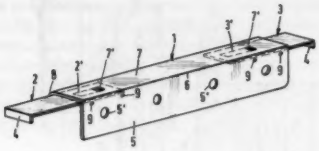
Karl-Hein Schudy, Espelkamp, Fed. Rep. of Germany, assignor to Robert Krause KG, Espelkamp, Fed. Rep. of Germany

Filed Sep. 15, 1978, Ser. No. 943,267

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742205

Int. Cl.[2] B42F *13/40, 15/00*

U.S. Cl. 402—4 **16 Claims**



1. A suspension device comprising a ring binder having a spine and a cover pivotal relative to said spine, a ring mechanism having rings mounted on said ring binder, a one-piece rigid carrier having a suspension arm and a supporting arm extending substantially at right angles to said suspension arm, said suspension arm having holes for suspending the carrier on at least two rings of the ring mechanism, and suspension members slidably mounted on said support arm of said carrier for movement between a retracted position within the contours of the binder cover and an extended position in which the suspension members project from opposite ends respectively of the binder spine to provide for suspending the ring binder.

16. A suspension device for a ring binder having a cover and a ring mechanism comprising a carrier formed by two angled profile members which are each connected to a suspension member and which each comprise a suspension arm provided with holes for receiving two rings of the ring mechanism of the binder and a supporting arm extending substantially at right angles to this, the supporting arm comprising a unilateral extension forming the suspension member, the holes for the rings being constructed in the form of sliding and gripping slots aligned parallel to the angled edges of the angled profile members and each comprising a widened portion at its end adjacent to the suspension member, said suspension members being slidable for movement between a retracted position within the contours of the binder cover and an extended position in which the suspension members project from opposite ends respectively of the binder spine to offer support for hanging the ring binder.

4,208,147

VARIABLY TENSIONED ROLL-TO-SHAFT CLAMPING MEANS

Sture Giege, Spanga, and Torgny C. B. Lagerqvist, Enskede, both of Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Mar. 21, 1978, Ser. No. 888,615

Int. Cl.[2] B60B *9/00*

U.S. Cl. 29—117 **16 Claims**

1. A roll device comprising:

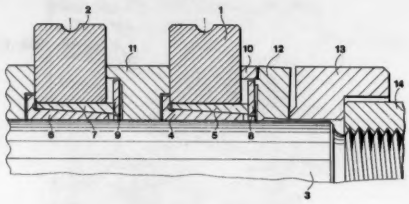
a roll shaft,

at least one roll ring mounted on the roll shaft,

a lock member securable to the roll shaft,

centering means interposed radially between the roll ring and the roll shaft to radially center the roll ring,

a first resilient spring element arranged to resiliently transmit axial forces from said lock means to said centering means to radially center said roll ring,



a second resilient spring element arranged to resiliently transmit axial forces from said lock means to said roll ring to axially clamp the latter.

4,208,148

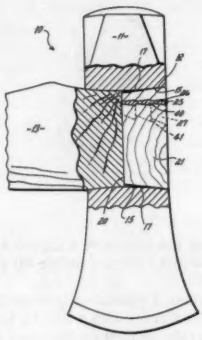
WEDGE FOR WOODEN HANDLED TOOL

Donald W. Biszantz, Loveland, Ohio, assignor to Easco Tools, Inc., Glen Burnie, Md.

Filed Feb. 5, 1979, Ser. No. 9,754

Int. Cl.[2] B25G *3/28*

U.S. Cl. 403—251 **6 Claims**



6. In a wooden handled tool having a head, an eye formed transversely in said head, a wooden handle in said eye, a wedge driven into the end of said handle, said wedge comprising:

a plurality of U-shaped elements,

each said element tapering in thickness from the upper end to the lower end of said element,

each said element having free edges tapering from the upper end to the lower end of said element,

said plurality of elements being integrally formed in end-to-end relation to provide a U-shaped wedge having stepped tapered major surfaces and stepped tapered edge surfaces.

4,208,149

ELECTRODE CONNECTING PIN ASSEMBLY

Donald K. Bowman, Niagara Falls, N.Y., assignor to Airco, Inc., Montvale, N.J.

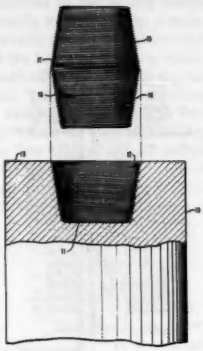
Filed Oct. 25, 1978, Ser. No. 954,948

Int. Cl.[2] H05B *7/14*

U.S. Cl. 403—267 **2 Claims**

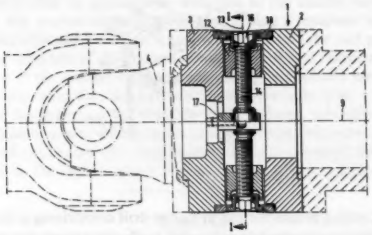
2. An electrode-electrode connecting pin preassembly comprising a graphite electrode having in an end face thereof, an internally threaded frusto-conical socket, an externally threaded double frusto-conical graphite connecting pin in

threaded engagement in said socket and a permanently flexible polymeric urethane adhesive composition applied to at least a portion of said engaged threads to inhibit inadvertent rotation



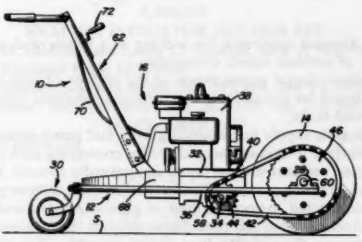
of said connecting pin relative to said electrode section socket, said adhesive being selected to volatilize completely at a temperature not substantially in excess of 200° C.

4,208,150
QUICK RELEASE CLUTCH COUPLING
Günter Napierala, Essen, Fed. Rep. of Germany, assignor to Gelenkwellenbau GmbH, Essen, Fed. Rep. of Germany
Filed Apr. 17, 1978, Ser. No. 897,125
Claims priority, application Fed. Rep. of Germany, May 13, 1977, 2721558
Int. Cl.² F16D *1/02*
U.S. Cl. 403—338 **5 Claims**



1. A quick release clutch coupling comprising a pair of annular coupling flanges concentric to a common axis and said coupling flanges being spaced apart along the common axis with a transverse surface on each said coupling flanges facing said transverse surface on the other, first and second axially extending clutch elements located on said transverse surface on each of said coupling flanges for rotationally coupling said coupling flanges together, said first and second clutch elements on each said coupling flanges being spaced circumferentially apart so that said clutch elements on one said coupling flange interfit between said clutch elements on the other said coupling flange, each of said first and second clutch elements having a first and a second radially and axially extending end bearing surface with the first and second surfaces spaced circumferentially apart, said first end bearing surfaces on said clutch elements of said flange being disposed in bearing contact with said first end bearing surfaces on said clutch elements of the other said flange, said first end bearing surfaces lying in a plane passing through the common axis of said coupling flanges surfaces on each of said clutch elements, the bearing surfaces on the clutch elements of one of said flanges being in direct engagement with the bearing surfaces of the clutch elements on the other coupling flange, said engaged bearing surfaces lying in a plane passing through the axis of rotation of said coupling, an axially elongated bolt extending transversely of the common axis of said coupling flanges between said transverse surfaces thereof in the space containing said clutch elements, said bolt intersecting the common axis and having oppositely pitched threads on opposite sides of said common axis mounted for rotational movement by a guide on said coupling, a pair of tension shoes carried on the opposite ends of said bolt for displacement in opposite radial directions relative to the common axis upon rotation of said bolt for selectively rotationally interengaging said coupling flanges, said second end bearing surface of each clutch element bearing against one of said tension shoes, the distance between said second end bearing surfaces on the opposite sides of each said tension shoe decreasing in the direction radially outwardly from the common axis of said coupling flanges.

4,208,151
YARD ROLLER
Andrew C. Cross, P.O. Box #173, Westfield, Ill. 62474
Filed Nov. 16, 1978, Ser. No. 961,149
Int. Cl.² E01C *19/26*
U.S. Cl. 404—122 **1 Claim**



1. A yard roller, comprising, in combination:

(a) a frame transversable over ground to be rolled, said frame including a U-shaped element having a web and a pair of spaced, substantially parallel, coextensive legs extending from the web toward and terminating at ends forming an open end area of the element, a platform extending from the web of the element, and a cross-bar disposed extending between and connected to the legs of the element, the bar supporting the platform in cooperation with the web of the element, a caster wheel swivel mounted at the web of the U-shaped element centrally of the legs of the element for cooperating with the drum to form a traversing support for the U-shaped element;

(b) a drum rotatably mounted on the frame and arranged extending between the legs at the ends of the legs for bridging the open end area of the U-shaped element and engaging ground over which the frame traverses;

(c) power means including an engine mounted on the platform, a gear box also mounted on the platform and connected to the engine, and a drive train connected to the gear box and the drum for causing the engine to rotate the drum and propel the frame, the cross-bar being journaled on the legs of the U-shaped element and forming the output shaft of the gear box, the cross-bar being connected to the drive train for actuating same; and

(d) a handle pivotally mounted on the platform adjacent the web of the U-shaped element and arranged extending away from the drum and frame.

4,208,152

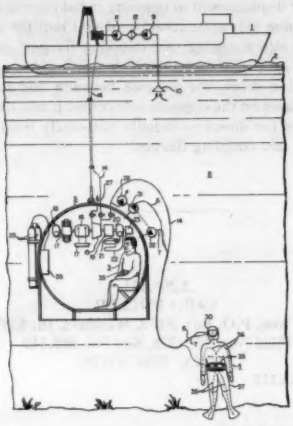
DIVER SUPPORT APPARATUS

John R. Colston, Annapolis, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 733,744, Oct. 19, 1976, abandoned. This application Oct. 23, 1978, Ser. No. 953,504

Int. Cl.[2] B63C *11/02*

U.S. Cl. 405—186 7 Claims



1. Support apparatus for a diver at a submerged site in a body of ambient liquid, comprising,

ambient liquid pump means at the surface of said body of liquid for pressurizing and displacing ambient liquid from said body,

a flexible supply line extending from said pump means at the surface to said submerged site for conveying such pressurized ambient surface liquid downwardly thereto, and

heat-producing conversion means at such submerged site connected to receive flow of pressurized ambient liquid from said line and operable to convert the hydraulic flow energy thereof into heat energy capable of maintaining comfort and warmth of such diver.

4,208,153

APPARATUS FOR DISPENSING RIVETS AND SIMILAR ARTICLES

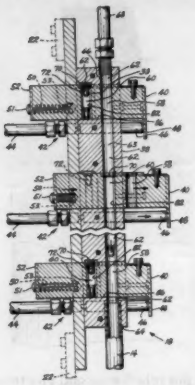
Brian R. Trethewy, Snohomish, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 23, 1977, Ser. No. 864,059

Int. Cl.[2] B65G *47/10, 51/00*

U.S. Cl. 406—72 27 Claims

1. In a feeding apparatus including a supply module having a plurality of feed portions each of which provide an orientated supply of a different size of articles, conveying means for receiving an individual article and conveying it to a desired location, and selection means for determining the size of article to be conveyed and providing a signal representative thereof; an improved dispensing means responsive to said signal for receiving the proper sized article from said supply module and providing said article to said conveying means, said dispensing means comprising: a body portion defining a plurality of aligned passageway segments and including a first end connected to said conveying means; and gate means including a plurality of parts each corresponding to a different one of said feed portions and located at least partially aligned with said passageway segments in a different space between adjacent segments, said parts individually movable in response to said signals between normal and actuated positions with respect to said body portion, each said part defining passage means therethrough for cooperating with said passageway segments to provide a substantially continuous enclosed article-passageway through said dispensing means whenever said part is in said normal or said actuated position and for receiving an article



from its corresponding feed portion and introducing said article into said article-passageway upon movement of said part from said normal to said actuated position.

4,208,154

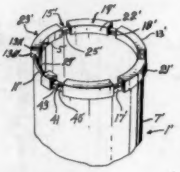
CORE DRILL

William P. Gundy, 5000 Brock St., Montreal, Quebec, Canada (H4E 1B6)

Filed Mar. 21, 1978, Ser. No. 888,738

Int. Cl.[2] B23B *51/04*

U.S. Cl. 408—204 1 Claim



1. Cutting means for use in a core drill comprising a circular ring having opposed annular end walls, inner and outer concentric side walls joining the end walls, one end portion of the ring composed of hard cutting material, the other end portion composed of softer support material, a V-shaped circular attachment groove in the annular end wall of the ring located in said other end portion of the ring, a set of opposed groove pairs in the inner and outer side walls extending between the annular end walls, a radial groove connecting each pair of opposed grooves, the radial grooves being located in the annular end wall in the one end portion, and a radial slot extending completely through the ring, the slot being located in one of the radial grooves.

4,208,155

GEAR CUTTING MACHINE WITH A HOB

Cesare Sabbioni, Bologna, Italy, assignor to CIMA S.p.A. di C. Sabbioni & C., Bologna, Italy

Filed Sep. 13, 1978, Ser. No. 941,862

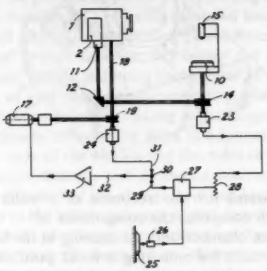
Claims priority, application Italy, Sep. 19, 1977, 27672 A/77

Int. Cl.[2] B23F *3/00*

U.S. Cl. 409—3 5 Claims

1. Gear cutting apparatus comprising: a turntable for carrying a workpiece; a slide movable radially with respect to the

turntable; a motor kinematically connected to the radially movable slide; a slide movable axially with respect to the turntable and carried by the radially movable slide; a motor kinematically connected to the axially movable slide; a hob mounted on the axially movable slide; a main motor mounted on the radially movable slide, the main motor being kinematically connected to the hob and to the turntable; a first dynamotachometer kinematically connected to the turntable; a second dynamo-tachometer kinematically connected to the motor which moves the axially movable slide; a first electronic control circuit for controlling the speed of movement of the axially movable slide, the first control circuit comprising a template having a predetermined profile, a sensor which follows the said profile, one of said template and sensor being fixed and the other moving with the axially movable slide, an analog multip-



lier-divider which receives signals from the first dynamotachometer and the sensor, and a comparator which receives signals from the multiplier-divider and the second dynamotachometer and which transmits an error signal to the motor which moves the axially movable slide; and a second electronic control circuit for controlling the movement of the radially movable slide in accordance with that of the axially movable slide, the second control circuit comprising a template having a predetermined profile, a sensor which follows the said profile of the template of the second circuit, one of said template and sensor of the second circuit moving with the radially movable slide, the other moving with the axially movable slide, a transducer for detecting the position of the radially movable slide, and a comparator which receives signals from the sensor of the second circuit and the transducer and which transmits an error signal to the motor which moves the radially movable slide.

4,208,156

MACHINE FOR MACHINING CRANKPINS OF A MULTIPLE-THROW CRANKSHAFT

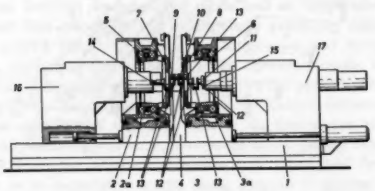
Bruno Kralowetz, and Gottfried Blaimschein, both of Steyr, Austria, assignors to GFM Gesellschaft fü Fertigungstechnik und Maschinenbau Aktiengesellschaft, Steyr, Austria

Filed Mar. 24, 1978, Ser. No. 889,632

Claims priority, application Austria, Apr. 18, 1977, 2679/77

Int. Cl.[2] **B23C** *3/06;* **B23B** *5/18*

U.S. Cl. 409—165 **2 Claims**



1. A machine for milling crankpins of a multiple-throw crankshaft having two ends and comprised of alternating mainshaft portions and crankpins between the two ends, including three axially consecutive crankpins and two axially consecutive mainshaft portions connecting the three crankpins, which comprises the combination of

(a) a machine bed extending in a longitudinal direction,

(b) gripping means on the machine bed for gripping the crankshaft at the two ends and positioning the crankshaft with its axis extending in the longitudinal direction,

(c) two longitudinal carriages mounted on the machine bed between the gripping means for relative movement to the machine bed in the longitudinal direction, the carriages defining a gap therebetween and the carriages permitting the crankshaft to pass therethrough,

(d) a tool carriage mounted on each one of the longitudinal carriages for relative movement thereto in a direction transverse to the longitudinal direction, the tool carriages permitting the crankshaft to pass therethrough,

(e) a stay mounted on the machine bed in said gap for relative movement to the machine bed in the longitudinal direction, the stay carrying

(1) two supports spaced apart in the longitudinal direction for radially engaging and supporting two axially consecutive mainshaft portions extending through the gap, and

(f) an annular milling tool carried by each one of the tool carriages and having radially inwardly directed cutting teeth operable to mill a respective one of the three axially consecutive crankpins extending from a respective one of the supported mainshaft portions towards a respective end of the crankshaft.

4,208,157

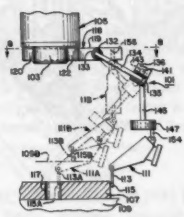
SNAP-ON INDICATOR HOLDER KIT

Rocco M. Guarino, and Lottie G. Guarino, both of 7648 Sunset Dr., Elmwood Park, Ill. 60635

Continuation-in-part of Ser. No. 597,318, Jul. 21, 1975, abandoned. This application Feb. 23, 1978, Ser. No. 880,418

Int. Cl.[2] **G01B** *3/22*

U.S. Cl. 409—218 **7 Claims**



1. In a snap-on holder kit adapted to be attached to a head portion of a machine for supporting an indicator, an arrangement comprising:

a holder having a body member being composed of stiff resilient material, said body member having a pair of spaced-apart prongs adapted to spread apart and to snap into snug gripping engagement with the head portion of the machine or other convenient supporting surface to be supported by and to extend therefrom, said prongs of said body member having means defining a generally semi-circular arcuate surface extending for more than 180° to contact the supporting surface through a continuous line of engagement of more than 180°, said body member having a portion extending laterally from said prongs, said portion having means defining an aperture therein adapted to receive rotatably therein for supporting purposes the indicator, wherein said prongs of said body member further include means defining a pair of complementary second and third generally semi-circular arcuate spaced-apart confronting surfaces adapted to snap into a pair of continuous lines of snug-gripping engagement with a

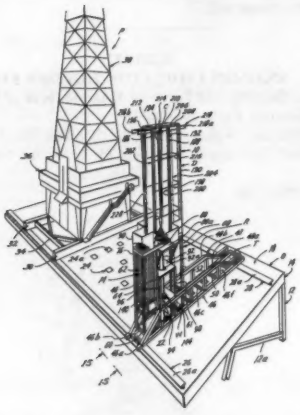
larger diameter portion of another machine, said second and third surfaces forming continuations of the first-mentioned surface, each one of said second and third surfaces extending for less than 180°.

4,208,158

AUXILIARY OFFSHORE RIG AND METHODS FOR USING SAME

Philip H. Davies, and Franklin M. Lohning, both of Sugar Land, Tex., assignors to Franklin Enterprises, Inc., Suger Land, Tex.

Filed Apr. 10, 1978, Ser. No. 895,235
Int. Cl.[2] E21B *19/00*
U.S. Cl. 414—22 **34 Claims**



1. An auxiliary offshore rig adapted to be used prior to, in conjunction with and subsequent to the use of a primary offshore rig mounted on platform skid beams on an offshore platform, the auxiliary offshore rig for relieving the primary offshore rig of well activities relating to tubular member or cable operations, comprising:

a truss member mounted for movement along the platform skid beams of the offshore platform;

a racking tower for receiving tubular members therein, said racking tower mounted for movement along said truss member and adapted to be centered over the well, said racking tower having racking tower skids supportively engaging said truss member and a rig floor adjacent the upper end thereof, said rig floor to provide a primary working area for the operators thereof; and,

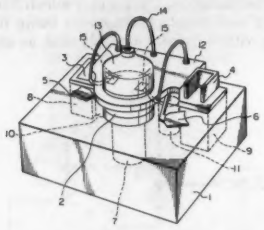
a working cage mounted substantially within said racking tower and supported by said truss member, said working cage formed with an opening therein adapted to be positioned in substantial axial alignment with the well for receiving the tubular members therethrough, said working cage to provide a secondary working area beneath said primary working area for the operators thereof.

4,208,159

APPARATUS FOR THE TREATMENT OF A WAFER BY PLASMA REACTION

Akira Uehara, Yokohama, and Hisashi Nakane, Kawasaki, both of Japan, assignors to Tokyo Ohka Kogyo Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 16, 1978, Ser. No. 916,252
Claims priority, application Japan, Jul. 18, 1977, 52-85879; Dec. 31, 1977, 52-159798
Int. Cl.[2] B65H *1/06*
U.S. Cl. 414—225 **3 Claims**



1. An apparatus for the treatment of a wafer by plasma reaction which comprises the components of

(a) a reaction chamber with an opening in the bottom,

(b) a wafer table for mounting a wafer positioned beneath the opening of the reaction chamber and capable of vertical movement relative to the reaction chamber to be fixed vacuum-tightly to the reaction chamber at the uppermost position,

(c) an in-take carrier means for carrying the wafer to a neighboring position to the wafer table,

(d) an in-take pick-up means for picking up the wafer from the in-take carrier means and placing the same on to the wafer table,

(e) a take-out pick-up means for picking up the wafer from the wafer table and bringing the same out from beneath the reaction chamber,

(f) a take-out carrier means for receiving the wafer carried by the take-out pick-up means, and

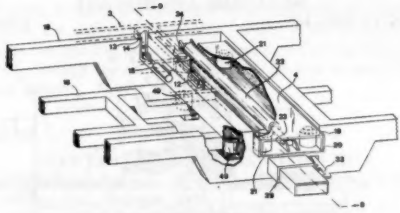
(g) a control means for driving the components (a) to (f) in linkage motion.

4,208,160

DEVICE FOR TRANSFERRING LOAD UNITS

Sten Lövgren, Amanuensvägen 10/206, S-104 05 Stockholm, Sweden

Filed Dec. 5, 1977, Ser. No. 857,665
Claims priority, application Sweden, Dec. 13, 1976, 7613978
Int. Cl.[2] B60P *1/00*
U.S. Cl. 414—347 **5 Claims**



1. A device for transferring load units, comprising a transfer apparatus for transferring the load units in an elevated condition between first and second longitudinally extending carriers, said carriers having at least two upwardly open generally

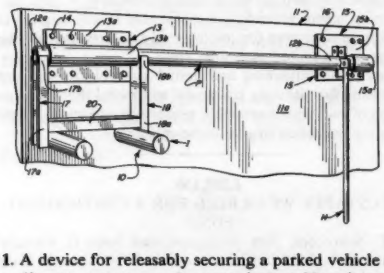
rectangular channels extending transversely to the longitudinal direction of said carriers, said channels being bridged by the load units when located on the carriers, said transfer apparatus being arranged on said second carrier and comprising at least two separate arms each having lifting means and being displaceable from the channels of said second carrier to the channels of said first carrier and vice versa transversely to the longitudinal direction of said carriers, said channels of said second carrier housing the arms when inactive in positions in which the arms extend transversely of said second carrier but not beyond the longitudinal sides thereof, each of said arms having a generally rectangular shape, as viewed from above, generally corresponding in size and shape to the rectangular shape of the channel therefor in the second carrier, loading platforms for the load units formed by supporting chassis of the carriers each comprising a plurality of partial load supporting platforms, said partial load supporting platforms on each of the carriers being located between and beside the channels recessed into said chassis and being rectangular as viewed from above, each of said partial load supporting platforms being formed by chassis portions extending in the longitudinal direction of the chassis between the sides of adjacent channels or between the ends of the chassis and the sides of the channels located adjacent thereto, and extending transversely of the longitudinal direction of the chassis from one longitudinal side of the chassis to the other, and each of said transfer arms being provided with its own separate operating mechanism for individually performing the displacement of said arm between the channels of the carriers.

4,208,161

DEVICE FOR RELEASABLY SECURING A VEHICLE TO AN ADJACENT SUPPORT

Steven J. Hipp, Milwaukee, and Norbert Hahn, Cudahy, both of Wis., assignors to Rite-Hite Corporation, Cudahy, Wis.

Filed May 30, 1978, Ser. No. 911,053
Int. Cl.[2] B65G 67/02
U.S. Cl. 414—401 **9 Claims**



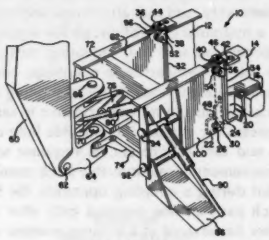
1. A device for releasably securing a parked vehicle against an adjacent structure and preventing accidental transverse movement of the vehicle away from the structure, said device comprising a first means mountable on the structure for hinged adjustment between an operative mode and an inoperative mode, said first means having an angularly extending distal portion spaced outwardly from the hinge axis and being adapted, when said first means is in an operative mode, to interlockingly engage an adjacent portion of the parked vehicle and position the adjacent portion of the vehicle between said distal portion and the hinge axis of the first means and substantially restrain transverse movement of the parked vehicle away from the adjacent structure and, when said first means is in an inoperative mode, being adapted to assume a vehicle-release position; and pivotally mounted second means operatively cooperating with said first means for effecting controlled hinged adjustment of the latter from said inoperative mode to said operative mode.

4,208,162

BACKHOE WEDGE LOCKING MECHANISM

Daniel R. Neitzel, Elgin, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Sep. 11, 1978, Ser. No. 941,828
Int. Cl.[2] E02F 3/72; F16C 11/10
U.S. Cl. 414—686 **16 Claims**



1. Backhoe mounting apparatus for removably attaching a backhoe to a host vehicle having a longitudinally extending frame, said backhoe mounting apparatus comprising:

a wedge bearing plate assembly fixedly attached to said longitudinal frame of said host vehicle;

a lower mounting tab having a through aperture fixedly attached to said longitudinal frame of said host vehicle, said lower mounting tab passing through said wedge bearing plate;

a backhoe frame having a longitudinal member capable of being mounted to said host vehicle frame, being constructed of spaced apart side plates each provided with aligned upper and aligned lower apertures;

a backhoe mounting collar carried in said aligned upper apertures, said collar having a longitudinal bore and a flat portion;

a wedge slidably carried on said wedge bearing plate, said wedge having a flat surface for contacting said wedge bearing plate and an inclined surface for contacting said flat portion of said backhoe mounting collar;

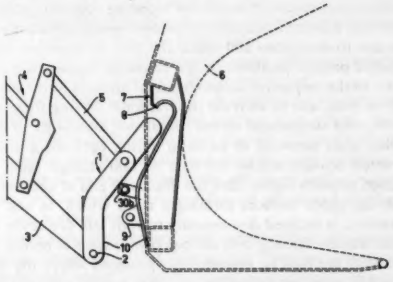
an upper pin passing through said wedge bearing plate assembly and said longitudinal bore of said backhoe mounting collar whereby said backhoe frame is attached to said longitudinally extending frame of said host vehicle.

4,208,163

AUTOMATIC QUICK-COUPLING DEVICE

Bo H. Holmqvist, Byske, Sweden, assignor to Renholmens Mekaniska Verkstad AB, Byske, Sweden

Filed Jan. 18, 1978, Ser. No. 870,528
Int. Cl.[2] E02F 3/96
U.S. Cl. 414—723 **7 Claims**



1. A coupling between a tool attachment adapted to be

supported on a carrier and tool mounting means fitting the tool attachment and adapted to support a tool, said tool mounting means carrying a fixed latch member and said tool attachment carrying a movable latch member which, when said tool attachment and said tool mounting means are in engagement, is movable into and out of locking engagement with said fixed latch member; means for moving said latch member between locking and unlocking positions to thereby couple and decouple, respectively, said tool attachment and said tool mounting means; a hydraulic control circuit for supplying power to a tool supported on said tool mounting means, said circuit including a pair of two-part hose couplings, one part of each coupling being stationary on said tool mounting means and the other part carried on and movable relative to said tool attachment; and means for moving the movable hose coupling parts relative to said tool attachment, in response to locking and unlocking movement of said movable latch member, in a manner such that during a coupling operation the hose coupling parts of each pair become engaged only after said movable latch member has arrived at a locking position and such that during a decoupling operation the coupling parts of each pair become disengaged before said movable locking member moves out of its locking position.

4,208,164

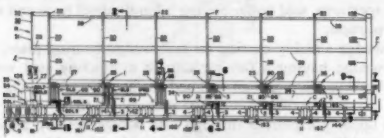
BAR CUT-OFF FEEDING MACHINE

Frank F. White, Lyndhurst, Ohio, assignor to Automation Development Corporation, Mentor, Ohio

Filed Mar. 17, 1978, Ser. No. 887,822

Int. Cl.[2] **B65G** *65/02;* **B66G** *47/26;* **B21D** *43/08;* **B23D** *33/02*

U.S. Cl. 414—748 **12 Claims**



1. Apparatus for feeding long flexible metal bars of relatively small cross section comprising an inclined storage ramp for receiving a single row of said bars and supporting them in side-by-side parallel relation, infeed conveyor means at the side of said ramp for receiving a series of bars and feeding them axially in a direction generally parallel to the bars on the ramp, escapement means for lifting and transferring at least 4 bars laterally from said ramp to said conveyor means at a predetermined loading zone during each cycle, a plurality of magnetic drive rolls having at least 4 axially spaced circumferential grooves for receiving the bars fed axially from said conveyor means, and magnetic means for inducing magnetic polarity in the bars moving from said escapement means to said conveyor means to straighten and space the bars, to maintain them in spaced parallel positions on the conveyor means, to guide the bars to the respective circumferential grooves of the magnetic drive rolls, and to increase the frictional driving force at said rolls, said escapement means comprising a plurality of escapement arms mounted to move in unison between a lower retracted position below the bars on said storage ramp and a raised position higher than the discharge end of said ramp and having upper surfaces forming a ramp which, in said raised position, is inclined downwardly toward said conveyor means and extends laterally over the conveyor means to permit movement of the bars by gravity from positions above the storage ramp to positions above the conveyor means, whereby bars of widely varying diameters can be fed from said storage ramp to said drive rolls.

4,208,165

COMPOSITE STATOR TYPE TURBO-MACHINE

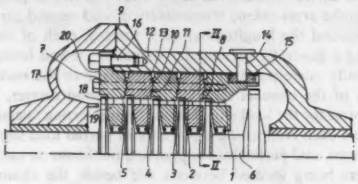
Rolf Wikstrom, Finspong, Sweden, assignor to Stal-Laval Turbin AB, Finspang, Sweden

Filed Jul. 5, 1978, Ser. No. 922,254

Claims priority, application Sweden, Jul. 12, 1977, 7708075

Int. Cl.[2] **F01D** *25/24, 9/02*

U.S. Cl. 415—138 **8 Claims**



1. A turbo-machine of the type comprising:

a rotor assembly including a plurality of spaced rotor blades extending from a rotor shaft;

a stator assembly including a stator housing surrounding said rotor assembly, with portions of said stator housing forming bearing contact with said rotor shaft;

a plurality of partition wall sections positioned adjacent one another within said stator housing, with each partition wall section including a plurality of apertures extending completely therethrough;

each partition wall section being formed from a pair of substantially similarly-shaped members having confronting edge surfaces contacting one another along a single plane extending diametrically through said respective partition wall section;

with each respective pair of confronting edge surfaces being angularly offset a predetermined amount compared to confronting edge surfaces of an adjacently disposed pair of similarly-shaped members, to axially align with one another the plurality of apertures extending through said similarly-shaped partition wall members;

fastening means extending through said axially aligned plurality of apertures for joining said similarly-shaped members into a united assembly; and

further means attaching and united assembly to said stator housing for allowing both axial and radial thermal expansion of said united assembly relative to said stator housing during operation of said turbo-machine.

4,208,166

ADJUSTABLE WEAR RING FOR A CENTRIFUGAL PUMP

Earle E. Schroeder, New Richmond, and John D. Campbell, Cincinnati, both of Ohio, assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 15, 1978, Ser. No. 906,101

Int. Cl.[2] **F04D** *29/08;* **F16H** *1/08*

U.S. Cl. 415—170 A **2 Claims**

1. In a centrifugal pump, having a casing and a rotary impeller, said casing having interior walls defining an inlet suction cavity and an outlet discharge cavity;

a bore formed in said interior walls through which fluid communication is established between the suction and discharge cavities;

an impeller rotatably supported in the discharge cavity and having an eye through which the fluid from the suction cavity flows through and into the discharge cavity;

an axial sleeve portion formed on said impeller, said sleeve portion having a peripheral reduced portion;

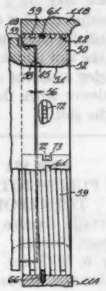
a wear ring supported within said bore;

a counterbore in one axial end of said wear ring adapted to receive the reduced portion of said sleeve;

control means for effecting controlled movement of said wear ring in said bore including a spiral groove of a plurality of turns formed in the peripheral circumference of said wear ring, each turn of said spiral groove presenting a squared configuration when viewed in cross section;

a reaction pin carried within said bore and extending radially inwardly into snug engagement with said spiral groove to cooperate therewith and provide a reaction force for effecting the controlled axial movement of said wear ring;

lock means associated with said wear ring and engageable



with said casing to lock said wear ring in an adjusted axial position, said lock means includes a lock pin carried in periphery of said wear ring and extending radially outwardly therefrom; and,

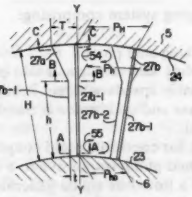
a slot formed in the wall of said bore of a predetermined length in which said lock pin is engaged to limit the rotation of said wear ring to a predetermined amount; whereby the angular distance that the wear ring is permitted to rotate will establish the desired spacing between the axial end face of the impeller and the shoulder face of the wear ring.

4,208,167

BLADE LATTICE STRUCTURE FOR AXIAL FLUID MACHINE

Norio Yasugahira; Takeshi Sato, both of Hitachi, and Kuniyoshi Tsubouchi, Kashiwa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 22, 1978, Ser. No. 945,054
Claims priority, application Japan, Sep. 26, 1977, 52/114631
Int. Cl.[2] F04D *29/54*; F01D *9/02*
U.S. Cl. 415—217 **10 Claims**



1. A blade lattice structure for an axial fluid machine comprising:

a plurality of static blades arranged circumferentially of the machine;

an upper side wall and a lower side wall having said stationary blades secured thereto at blade tips and blade roots respectively; and

an annular flow path defined between outer surfaces of said stationary blades and said side walls; wherein the improvement comprises:

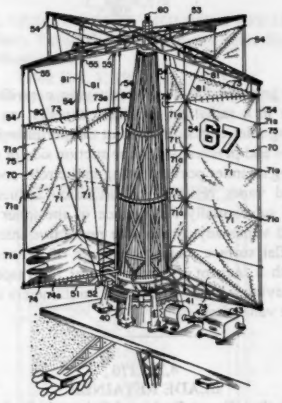
an arrangement whereby said stationary blades each have a cross sectional shape such that the thickness of each stationary blade increases in going toward a surface of said upper side wall from an arbitrarily selected position on the blade spaced radially of the machine from a surface of said lower side wall, whereby the area of a throat for each section of the stationary blade can be varied along its height.

4,208,168

WIND TURBINE

Jimmy M. Chen; Signor Y. Chen, and Vincent S. Chen, all of No. 10, 3rd Fl., Alley 20, Lane 125, Chung 12th Rd.,, Shih Lin District, Taipei, Taiwan

Filed May 18, 1978, Ser. No. 906,924
Int. Cl.[2] F03D *3/06*
U.S. Cl. 416—132 B **12 Claims**



1. An improved wind turbine with the provision of a lattice steel tower;

a conical strengthened network axle which is mounted upon said lattice steel tower; and

more than three upper rotor arms and more than three lower rotor arms, said upper and lower rotor arms being vertically in alignment with each other and horizontally fixed onto said strengthened network axle;

a plurality of vertically oriented stays each operatively attached to an upper and a lower rotor arm;

more than three blades which are adapted to be trimmed between said upper rotor arms and lower rotor arms, each of said blades including an inner side sail, an outer side sail, an end sail and a base sail, said outer side sail including a plurality of separate rectangular sail pieces with a rectangular net behind said rectangular sail pieces and attached to said vertical stays;

a transmission mechanism, said transmission mechanism being connected to said axle so that thrust by wind, said blades will impart a motion to said strengthened network axle and to said transmission mechanism for converting wind power into mechanical power.

4,208,169

IMPELLER FOR CENTRIFUGAL PUMPS

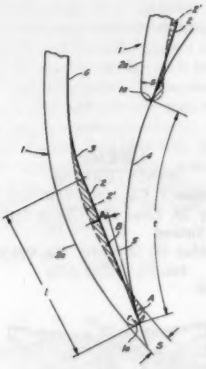
Karl-Heinz Becker, Worms; Hans-Dieter Knöpfel, Frankenthal; Alexander Nicklas, Bobenheim; Peter Hergt, Ludwigshafen, and Engin Diler, Frankenthal, all of Fed. Rep. of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Fed. Rep. of Germany

Filed May 10, 1977, Ser. No. 795,561

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1977, 2708368

Int. Cl.[2] F04D *29/24*

U.S. Cl. 416—185 **4 Claims**



1. In an impeller for liquid-conveying centrifugal pumps, particularly in a radial or semiaxial impeller, an annulus of vanes having inlet edges disposed at the periphery of a circle, suction sides and pressure sides, the suction side of each of said vanes having an inner portion facing said circle; and means for making said vanes resistant to cavitation induced erosion, including a substantially flat surface of the inner portion of each of said vanes adjacent to the respective inlet edge, the respective flat surface making an angle of between 0 and 5 degrees with a tangent to said circle at the respective inlet edge, and having a length at least of 3 millimeters and at most equal to the vane pitch.

4,208,170

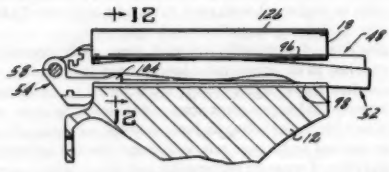
BLADE RETAINER

James W. Tucker, Forest Park, and Robert A. Peck, Loveland, both of Ohio, assignors to General Electric Company, Cincinatti, Ohio

Filed May 18, 1978, Ser. No. 907,238

Int. Cl.[2] F01D *5/32*

U.S. Cl. 416—221 **8 Claims**



1. A blade locking device for locking radially projecting blades in a rotor, each blade having a dovetail tang at its radially inward end and the rotor having dovetail slots extending across its periphery from one side of the rotor to the other, each dovetail tang being received in one of said slots providing a radial space between the tang and the bottom of the slot, wherein the improvement comprises:

a spacer sized to be inserted within the radial space between the tang and the bottom of the slot in a generally undeformed state without deformation of the tang or slot, the spacer having a first generally arcuate surface which abuts the tang when the spacer is deformed after insertion to exert an outwardly directed load on the tang;

blocking means insertable within the slot and under the spacer to retain the spacer in its deformed state after insertion in the slot; and

a sleeve received within the slot and under the spacer, said sleeve having a radially inner surface generally contoured to the bottom of the slot which it confronts, and wherein said spacer includes a second generally arcuate surface which abuts the sleeve when the spacer is deformed after insertion within the slot.

4,208,171

HYDRODYNAMIC PUMP UNITS AND REGULATORS THEREFOR

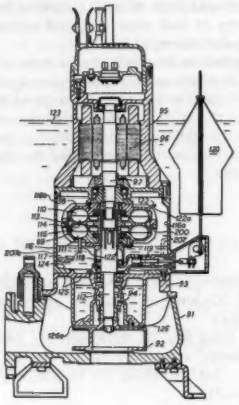
Arne F. Jonsson, Sodertalje, Sweden, assignor to Pumpex Production AB, Bandhagen, Sweden

Filed Apr. 6, 1977, Ser. No. 785,107

Claims priority, application Sweden, Apr. 9, 1976, 7604234; May 24, 1976, 7605875; May 26, 1976, 7605994

Int. Cl.[2] F04B *49/00, 49/04*

U.S. Cl. 417—15 **39 Claims**



1. A fluid pumping system comprising:

a pump;

a motor for driving said pump;

means for coupling said motor and said pump to drive said pump at variable speeds wherein heat generated by said coupling means and said motor is transferred to the fluid being pumped;

regulator means for controlling said coupling means to vary the speed of said pump responsive to a control signal and responsive to a flow rate signal generated by said regulator means and related in value to the flow rate of the pump, including:

means for providing a pump speed signal related in value to the pump speed;

means for providing a set point signal related in value to a ratio between a static head of the pump and a head of the pump at zero flow; and

means for generating the flow rate signal responsive to said first signal and said set-point signal; and a pumping cycle controller including:

means for sensing a fluid level of a body of fluid to be pumped by the system; and

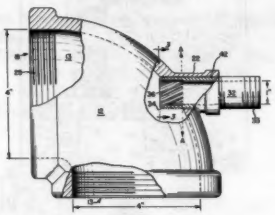
means connected to said sensing means for providing the control signal to said regulator to start said pump when the fluid level reaches a predetermined first level, to vary the speed of the pump responsive to changes in the fluid level above the first level, and to operate the pump at a minimum speed when the fluid level is between the first level and a predetermined second level, lower than the first level.

4,208,172

MARINA SIPHON DEVICE

Richard G. Dill, Rte. 1, Box 103, Penhook, Va. 24137

Filed Mar. 8, 1978, Ser. No. 884,435
Int. Cl.[2] F04F *5/42*
U.S. Cl. 417—171 **7 Claims**



1. A siphon device for use around marinas and the like for pumping water containing large size debris without clogging comprising an ell body member of substantial size, said ell body member having a large size input opening, a large size output opening of the same size as the input opening, a substantially smaller high pressure liquid input area between the input and the output openings and along the outer largest circumferential surface thereof, said area of high pressure liquid input including an integral stub member extending outwardly of the ell body member and having the central axis thereof substantially in alignment with the central axis of the output opening, said integral stub member being provided with internal threads for adjustable reception of a short high pressure input nozzle therewithin, a short externally threaded high pressure input nozzle securably mounted within the integral stub member, and said short nozzle being provided with internal grooves along the inside of the end which is inside the stub member, said internal grooves being at an angle of approximately 30° to the central axis of the nozzle so as to create a swirling and twisting effect to the high pressure liquid being fed therethrough.

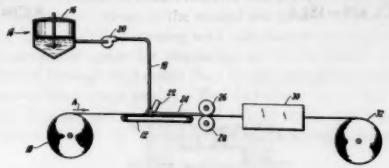
4,208,173

METHOD FOR TREATING FABRICS

Razmic S. Gregorian, Aiken, and Chettoor G. Namboodri, North Augusta, both of S.C., assignors to United Merchants and Manufacturers, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 794,627, May 6, 1977, abandoned, which is a continuation-in-part of Ser. No. 584,389, Jun. 6, 1975, Pat. No. 4,118,526, which is a continuation-in-part of Ser. No. 584,389,. This application Jul. 27, 1978, Ser. No. 928,743
The portion of the term of this patent subsequent to Oct. 3, 1995, has been disclaimed.
Int. Cl.[2] B41M *1/10*; D06M *1/00, 13/34*
U.S. Cl. 427—296 **9 Claims**

1. In a method for treating a fabric with a finishing agent wherein the finishing agent in a liquid medium is applied to the fabric and the fabric is then subjected to drying and a fixation or curing step, the improvement which comprises using a treating composition which is stable and will substantially retain its physical properties until such time as pressure is applied thereto composed of a fabric finishing agent in an amount effective to impart the properties of the finishing agent to the fabric, and from about 0.01 to about 10 weight percent of a foam stabilizer, the remainder of the composition being a liquid diluent and conventional additives, foaming the treating composition into a foam having a blow ratio in the range from about 2:1 to 20:1 and a foam density in the range from about 0.5



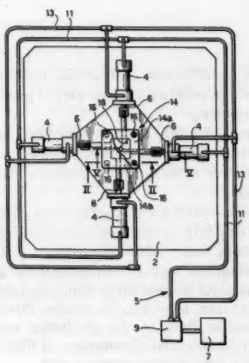
gm/cc to 0.05 gm/cc, applying a bank of the foam directly on to a fabric, reducing the thickness of the foam in contact with the fabric with the foam substantially retaining its physical properties, collapsing the foam and forcing the foam into the coated fabric by applying pressure and then subjecting the fabric to said drying and curing or fixation steps.

4,208,174

RADIAL COMPRESSION MOLDING APPARATUS

Stefano Taricco, Turin, Italy, assignor to Centro Ricerche Fiat S.p.A., Orbassano, Italy

Filed Feb. 1, 1979, Ser. No. 8,441
Claims priority, application Italy, Feb. 1, 1978, 67192 A/78
Int. Cl.[2] B30B *11/00, 1/08*
U.S. Cl. 425—78 **2 Claims**



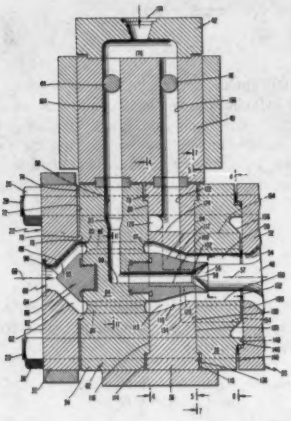
1. A radial compression die for forming a molded article by compressing a moldable material from a first volume to a final volume along a plurality of radial directions which are substantially perpendicular to a common longitudinal axis and lie in different planes, said radial compression die comprising a plurality of complementary die segments which define a cavity in which said moldable material is to be introduced and are movable concurrently between a first inoperative position and a final compression position which respectively define said first volume and said final volume, and drive means to forcedly move said die segments between their first and final positions, each of said die segments consisting of a plurality of separate adjacent segment portions which are superimposed along a direction parallel to said common longitudinal axis and are simultaneously operable by said drive means in such a way as to undergo displacements having different lengths when said die segments are moved between their first and final positions.

4,208,175

COEXTRUSION FEEDBLOCK AND PROCESS

Larry A. Rosenbaum, Marion, Ohio, assignor to HPM Corporation, Mount Gilead, Ohio

Division of Ser. No. 751,887, Dec. 17, 1976, Pat. No. 4,125,585.
This application Sep. 25, 1978, Ser. No. 945,259
Int. Cl.[2] B29D 23/04
U.S. Cl. 425—131.1 5 Claims



3. Apparatus for extrusion of a tubular member of indefiite length with a wall consisting of a plurality of generally concentric layers, comprising:

pipehead means having an inlet opening from which an axially extending torpedo projects, and operable to form a tubular member from synthetic resinous material passing therethrough;

feedblock means having a discharge zone coaxial with the torpedo, a first inlet opening in coaxial alignment with the discharge zone, a second inlet opening, and further including core manifold means communicating with the first inlet opening and the discharge zone, operable to develop a cylindrical inlet flow into an annular flow and accelerate the annular flow to the discharge zone so that a uniform circumferential distribution of fluid properties is obtained in a first annular stratum, and

skin manifold means communicating with the second inlet opening and the discharge zone having

a first branch channel means *upstream of said torpedo and discharging onto said torpedo* with a portion coaxial to the torpedo and cooperating therewith to define a second convergent channel for spreading a second annular stratum on the first annular stratum in the discharge zone so that a uniform circumferential distribution of fluid properties is obtained in the second annular stratum, and

a second branch channel means which applies material peripherally to the discharge zone through a third convergent channel at the interface between the pipehead means and the feedblock means, the third convergent channel accelerating a third stratum so that a uniform circumferential distribution of fluid properties is obtained; and

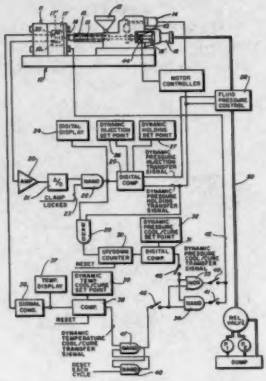
means on the pipehead means for connecting the feedblock means and the pipehead means.

4,208,176

TIME INDEPENDENT CYCLE CONTROL FOR PLASTIC INJECTION MOLDING MACHINES

Joseph F. Salerno, Meriden, Conn., assignor to Litton Industrial Products, Inc., New Britain, Conn.

Continuation-in-part of Ser. No. 587,043, Jul. 16, 1975, abandoned. This application Sep. 15, 1977, Ser. No. 833,536
Int. Cl.[2] B29F 1/06
U.S. Cl. 425—139 1 Claim



1. Apparatus for controlling a cyclically operated screw-injection plastic molding machine having a screw reciprocably and rotatably mounted within a barrel, means for feeding raw plastic material into said barrel, means for rotating said screw to plasticize and advance said plastic material toward a sprue located at one end of said barrel, said sprue communicating with a mold having a cavity of predetermined form, means for clamping the mold together, whereby the mold cavity assumes said predetermined form, means for forcing said screw toward said sprue whereby said plasticized plastic material which has accumulated in said barrel is injected through the sprue into the mold cavity to form a molded plastic part, means for applying pressure to the screw to hold the plastic in the cavity until the plastic solidifies, and means for unclamping said mold whereby said molded article may be removed therefrom and said molding machine may be recyclably operated, the improvement comprising:

a pressure transducer for generating mold cavity pressure signals,

a first comparator means for comparing mold cavity pressure signals with a first predetermined value representative of the pressure in the mold cavity during injection which insures that the plastic fills the mold cavity, said comparator means generating a first coincidence signal,

first pressure control means for changing the pressure applied to the screw from an injection pressure to a holding pressure in response to said first coincidence signal,

a second comparator means for comparing said cavity pressure signals with a second predetermined value representative of the pressure in the mold cavity after injection to insure that the plastic has sufficiently solidified so that the holding pressure on the screw may be reduced and for generating a second coincidence signal,

second pressure control means for reducing the pressure applied to the screw from said holding pressure in response to said second coincidence signal,

a third comparator means for comparing said cavity pressure signals with a third predetermined value representative of the pressure in the mold cavity after injection at which the molded plastic is sufficiently solidified to be ejected from the mold and for generating a third coincidence signal,

a temperature transducer for generating signals representing

part temperatures in the mold cavity,

a fourth comparator means for comparing generated temperature signals with a predetermined value representative of the temperature at which the molded plastic can be ejected from the mold and for generating a fourth coincidence signal,

means for unclamping the mold and ejecting the molded part,

and gate means for holding the first occurring of the third and fourth coincidence signals until the last occurring of the third and fourth coincidence signals whereby the mold is unclamped and the part is ejected only after the cavity pressure and the cavity temperature have both achieved predetermined values.

4,208,177

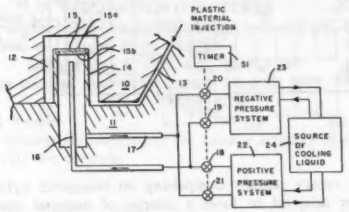
FLUID COOLING OF INJECTION MOLDED PLASTIC ARTICLES

Paul E. Allen, Newtown, Conn., assignor to Logic Devices, Inc., Bethel, Conn.

Division of Ser. No. 860,370, Dec. 14, 1977. This application May 11, 1979, Ser. No. 37,979

Int. Cl.[2] B29C *1/02*; B29F *1/022*

U.S. Cl. 425—404 **4 Claims**



1. Apparatus for cooling a plastic article that is formed by injection of plastic material into a mold formed by mold dies comprising means forming a cooling passgeway in the mold dies at least adjacent a portion of the cavity, means forming a fluid permeable porous conduit between the cooling passageway and a portion of the mold cavity, a source of cooling liquid, means for providing less than atmospheric pressure in the passageway adjacent said porous conduit, means for forcing said cooling liquid through the passageway to have the liquid at least adjacent the porous conduit be at a greater than atmospheric pressure, and means for alternatively connecting said means for providing less than atmospheric pressure and said forcing means to said passageway.

4,208,178

HEAD FOR EXTRUDING THERMOPLASTIC TUBES

Dietmar Przytulla, Sindorf, Fed. Rep. of Germany, assignor to Mauser Kommandit-Gesellschaft, Bruhl, Fed. Rep. of Germany

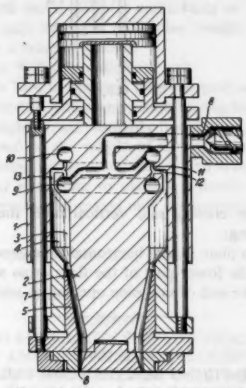
Filed Aug. 25, 1978, Ser. No. 936,697

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1977, 2740579

Int. Cl.[2] B29D *23/04*; B29F *3/04*

U.S. Cl. 425—467 **11 Claims**

1. An extrusion head for the production of tubes of thermoplastic material, comprising an axially extending housing and an axially extending mandrel having the axis thereof in generally parallel relation with the axis of said housing, axially extending portions of said housing and mandrel being in spaced relation and defining therebetween an annular axially extending accumulator space with the axis thereof disposed in parallel relation with the axis of said mandrel, said housing having a first end and a second end each extending transversely of the axis thereof, an extruding nozzle located at the second end of said housing, and axially extending portions of said housing and said mandrel forming an outlet duct arranged at one end thereof to receive thermoplastic material exiting from the end of said accumulator space closer to the second end of said housing and at the other end to deliver the thermoplastic material to said extruding nozzle, wherein the improvement comprises that said housing includes an annular shaped extrusion plunger movably displaceable through said accumulator space in the axial direction thereof, said plunger being movable from a position closer to the second end of said housing toward the first end of said housing with said plunger moving into said accumulator space for displacing the thermoplastic material therein through said outlet duct to said extruding nozzle, said accumulator space having a first end closer to the first end of said housing and a second end spaced in the axial direction thereof toward the second end of said housing, a supply duct



system for conveying the thermoplastic material from a source into the first end of said accumulator space, said supply duct system including a stationary first annular duct extending in the axial direction of said housing and connected to the first end of said accumulator space around the circumferential extent thereof, said first annular duct having the same cross-section over the axial length thereof, as said extrusion plunger is moved into said accumulator space toward the first end of said housing and displaces the thermoplastic material from said accumulator space one of the axially extending surfaces of said extrusion plunger in combination with the juxtaposed surface of said mandrel forms a reduced annular duct-like portion of said accumulator space of variable axial length interconnecting the remaining portion of said accumulator space and said outlet duct.

4,208,179

INTERNALLY COOLED WORKPIECE-SUPPORT GRATE

Winfried Gelsing, Essen, and Hans-Martin Nolzen, Voerde-Spellen, both of Fed. Rep. of Germany, assignors to Oschatz GmbH, Essen, Fed. Rep. of Germany

Filed Apr. 6, 1979, Ser. No. 27,866

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1978, 2815260

Int. Cl.[2] F26D *3/12*

U.S. Cl. 432—234 **10 Claims**

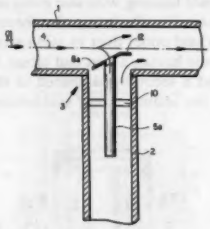
1. A furnace workpiece-support system having

at least one horizontal workpiece-support tube through which a fluid coolant is circulated,

at least one vertical tube connected at its upper end to said horizontal tube and having a blind lower end,

a flow-diversion pipe having an upper intake end opening in an upstream direction into said horizontal tube and a lower end opening downwardly into said vertical tube,

said pipe being received with clearance in said vertical tube, whereby said coolant is diverted by said pipe from said horizontal tube, is injected downwardly into said vertical pipe to cool same, and rises vertically in said vertical tube around said pipe to reenter said horizontal



tube after cooling said vertical tube, the improvement comprising:

a deflection plate in said horizontal tube generally blocking at least the lower part of the flow cross section thereof, said intake end of said pipe opening at said plate.

4,208,180

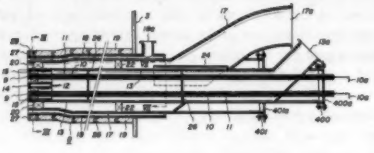
MIXED-FIRING BURNERS FOR USE WITH PULVERIZED COAL AND HEAVY OIL

Michiharu Nakayasu; Kenzo Kumamoto; Kenji Suzuki; Arata Kuba, and Katsushi Kitagawa, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Feb. 6, 1978, Ser. No. 875,402

Int. Cl.[2] F23Q *9/00*

U.S. Cl. 431—284 **2 Claims**



1. A mixed-firing burner for use with coal and heavy oil comprising a heavy oil supply pipe having a burner tip at one end; a protective pipe surrounding said heavy oil supply pipe; a pipe for supplying air necessary to burn heavy oil and surrounding said protective pipe, said air supply pipe being provided with a guide pipe in its front end; a coal air supply pipe concentrically surrounding said air supply pipe for supplying a mixture of pulverized coal and air; a perforated plate provided at the fore end of said air supply pipe for interconnecting said guide pipe and said air supply pipe, said perforated plate having a great number of perforations formed therin; a cooling medium supply pipe and a protective caster successively surrounding said coal-air supply pipe, said cooling medium supply pipe being supplied with air and having a front end opened to the outside; an air whirler provided between the tip of said protective pipe and said guide pipe; a coal whirler provided between the tip of said air supply pipe and said coal-air supply pipe; and an intermediate whirler located at an intermediate point along the length of said coal-air supply pipe.

4,208,181

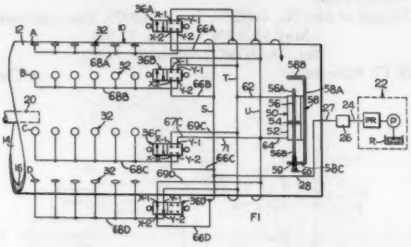
LIQUID METERING AND DISTRIBUTION ARRANGEMENT FOR ROTARY REACTOR

Eugene F. Rossi, Wauwatosa, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 13, 1978, Ser. No. 960,091

Int. Cl.[2] F27B *7/20*

U.S. Cl. 432—109 **14 Claims**



1. A rotary reactor comprising an elongated cylindrical chamber adapted to have a charge of material contained therein, a plurality of nozzles supported by said rotary reactor in fluid communication with said chamber, said nozzles being positioned about the periphery of said reactor in substantially equally angularly spaced relation to each other, a separate liquid flow control valve associated with and corresponding to each of said nozzles, each of said flow control valves being mounted on and rotatable with said rotary reactor, a metering cylinder mounted on said rotary reactor and rotatable therewith, a piston member movable in said cylinder in alternately opposite directions to deliver a predetermined measured volume of liquid from said cylinder equally in each direction of movement of said piston member, a first hydraulic circuit interconnecting each of said liquid flow control valves with a liquid fuel supply and with one end of said metering cylinder on one side of said piston member, a second hydraulic circuit interconnecting each of said liquid flow control valves with an opposite end of said metering cylinder on an opposite side of said piston member and with the nozzle corresponding to the given flow control valve, means adapted to selectively move each flow control valve to an "On" position to permit hydraulic flow through said first and said second hydraulic circuits when the given nozzle corresponding to a given flow control valve moves to a first predetermined circumferential position relative to the charge of material in said chamber, and to move each flow control valve to an "Off" position to prevent hydraulic flow through said first and said second hydraulic circuits when said given nozzle moves to a second predetermined circumferential position relative to the material in said chamber, the hydraulic connections of said first and said second hydraulic circuits between said metering cylinder and the flow control valves of alternate circumferentially spaced nozzles being reversed as compared to each other whereby to cause said piston member to move in said metering cylinder in alternately opposite directions to deliver a predetermined measured volume of liquid from alternate sides of said piston to alternate circumferentially spaced nozzles.

4,208,182

PROCESS FOR TRANSFER PRINTING AT ELEVATED TEMPERATURES

Atsushi Suzuki, Toyko, Japan, assignor to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Feb. 15, 1977, Ser. No. 768,931

Claims priority, application Japan, Feb. 17, 1976, 51-15500; Jul. 6, 1976, 51-79496

Int. Cl.[2] D06P *3/46, 5/00*

U.S. Cl. 8—471 3 Claims

1. A process for applying disperse dye to an acetate textile fabric or acetate film comprising the steps of:

pre-treating the acetate material with a gas-fading inhibitor against a nitrogen oxide gas, which inhibitor is an aliphatic or aromatic amino compound,

placing a transfer printing sheet having thereon a desired design layer containing disperse dye on the thus pre-treated acetate material with the design layer facing thereto and then, as the final step,

printing the pre-treated acetate material by sublimation transfer of the disperse dye in the form of the design at an elevated temperature.

4,208,183

PROCESS FOR IMPROVING THE STORAGE STABILITY OF INDOLE DYESTUFFS

Jean F. Grollier, and Chantal Fourcadier, both of Paris, France, assignors to L'Oreal, Paris, France

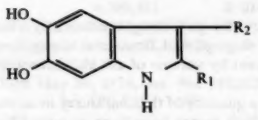
Filed May 9, 1978, Ser. No. 904,309

Claims priority, application France, May 10, 1977, 77 14254

Int. Cl.[2] A61K *7/13*

U.S. Cl. 8—409 10 Claims

1. A process for improving the storage stability of either a dye having the formula:



in which R_1 and R_2, identical or different, are hydrogen or methyl, or a cosmetically acceptable salt of said dye comprising the steps of dissolving at least one of said dye or salt thereof in at least one substantially anhydrous hydroxylic solvent selected from the group consisting of ethyl alcohol, isopropyl alcohol, tert.-butyl alcohol, ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, ethylene glycol monobutyl ether, and the acetate of ethylene glycol monoethyl ether, wherein the dye or salt thereof is present in an amount from about 0.1 to 80% by weight, and maintaining said dye in the presence of said anhydrous solvent during storage.

4,208,184

DRIED PULVERULENT PRODUCTS

Rudolf Nowak, Krefeld; Kurt Dahmen, Rheydt, and Eduard Barthell, Krefeld, all of Fed. Rep. of Germany, assignors to Chemische Fabrik Stockhausen & Cie, Krefeld, Fed. Rep. of Germany

Continuation of Ser. No. 345,916, Mar. 29, 1973, abandoned, which is a continuation-in-part of Ser. No. 173,329, Aug. 19, 1971, abandoned. This application Dec. 28, 1978, Ser. No. 974,276

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1970, 2041535; Mar. 29, 1972, 2215212

Int. Cl.[2] C14C *9/00, 9/02*

U.S. Cl. 8—94.23 16 Claims

1. A leather fatting agent comprising an aqueous solution, emulsion or disperson prepared by dissolving, emulsing or dispersing in water between 4 and 15% by weight of a normally free-flowing pulverulent product from at least one substance having a non-solid consistency, said pulverulent product being in admixture with a carrier composition wherein said carrier composition is 20–90% by weight of the mixture of carrier composition and free-flowing pulverulent product, said substance having a non-solid consistency being a fat or oil of vegetable or animal origin, a mineral oil, a paraffin wax having a softening point of from 30° to 180° C., a chlorinated paraffin, a mineral fat, a fatty alcohol, a fatty acid, a fatty amine or a reaction product of these substances which has a non-solid consistency, said carrier composition comprising whey, whole or skimmed milk and having the dry weight analysis of:

(a) from 0.1 to 35% of an inorganic or water-soluble salt which is a water-soluble chloride, sulfate, carbonate or phosphate of an alkali or alkaline earth metal or a chloride or a water-soluble chloride or sulfate of aluminum, chromium or zirconium or a water-soluble alkali metal or alkaline earth metal salt of a mono-basic or a poly-basic carboxylic acid having a molecular weight not greater than 200 or a mixture thereof,

(b) from 0.1 to 90% of an albumin, and

(c) from 0.1 to 70% of a mono-, oligo- or poly-saccharide or a mixture thereof, said composition having between 4 and 15% by weight of said normally free-flowing pulverulent product based on the weight of the entire leather fatting agent including carrier composition and water.

16. A method according to claim 4 wherein said carrier composition comprises skimmed milk components.

4,208,185

METHOD AND APPARATUS FOR THE MEASUREMENT OF ANTIGENS AND ANTIBODIES

Masanobu Sawai, Yamato; Tadamitsu Sudo, Sagamihara, and Shogo Enomoto, Tokorozawa, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

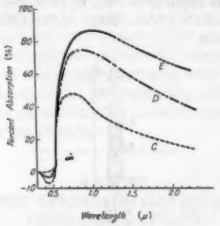
Continuation-in-part of Ser. No. 825,160, Aug. 16, 1977, Pat. No. 4,118,192. This application Jun. 20, 1978, Ser. No. 917,258

Claims priority, application Japan, Aug. 16, 1976, 51/97158; Feb. 15, 1978, 53/15328

The portion of the term of this patent subsequent to Oct. 3, 1995, has been disclaimed.

Int. Cl.[2] G01N *21/24, 33/16*

U.S. Cl. 23—230 B 31 Claims



1. An absorption method for determining antigens and antibodies comprising reacting an antigen or antibody or a mixture thereof with a corresponding antibody, or antigen or mixture thereof which has been supported on insoluble carrier particles having an average diameter of not greater than 1.6 microns to sensitize the carrier particles, said reaction being carried out in a liquid medium, wherein said carrier particles are present in the reaction mixture in a concentration of 0.05 to 1% by weight, irradiating the resulting reaction mixture with light having a wavelength in the range of 0.6 to 2.4 microns and longer than the average diameter of the carrier particles by a factor of at least 1.1 and measuring the absorbance or percent absorption of the reaction mixture.

4,208,186

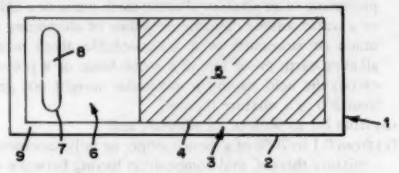
PROCESS FOR MONITORING TIME-TEMPERATURE HISTORIES OF PERISHABLES UTILIZING INACTIVE FORM OF DIACETYLENE

Gordhanbhai N. Patel, Morris Plains, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Aug. 30, 1978, Ser. No. 938,174

Int. Cl.[2] **G01N** *21/06*

U.S. Cl. 23—230 R **6 Claims**



1. In a process for monitoring the time-temperature history of an article including the steps of:

(a) applying to an article an integral time-temperature history indicator comprising a diacetylene compound, containing at least one —C≡C—C≡C— group, capable of undergoing a color change upon thermal annealing, after contacting an activating vapor, said color change being representative of the integrated time-temperature history of thermal annealing; and

(b) providing said vapor to said diacetylene compound, the improvement which comprises providing said diacetylene compound in an inactive form, capable of being converted to an active form upon contacting said activating vapor, said active form capable of undergoing a color change upon thermal annealing.

4,208,187

DIAGNOSTIC TEST

Morris L. Givner, Pierrefonds, Canada, assignor to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 862,062, Dec. 19, 1977, Pat. No. 4,138,214. This application Oct. 6, 1978, Ser. No. 949,174

Int. Cl.[2] **G01N** *33/16;* **B01D** *31/00;* **G01N** *21/04*

U.S. Cl. 23—230 B **20 Claims**

1. In a diagnostic test method suitable for the detection of physiological conditions characterized by the presence of a polypeptide or glycoprotein antigen selected from chorionic gonadotropin, human chorionic gonadotropin, pregnant mare's serum gonadotropin, carcino embryonic antigen, luteinizing hormone, follicle stimulating hormone, human menopausal gonadotropin and thyroid stimulating hormone in urine including:

(a) clarifying a sample of the urine to be tested;

(b) subjecting about 5 to 50 ml of the clarified urine sample to absorbent induced ultrafiltration through an ultrafiltration membrane backed by a layer of absorbent capable of sorbing urine serum passing through the membrane, and said membrane having a molecular weight with cut-off from about 5,000 to about 200,000, whereby said polypeptide or glycoprotein antigen is retained in the sample;

(c) continuing the ultrafiltration until the retentate sample is one-tenth to one-five hundredth its original volume;

(d) diluting the retentate with sufficient water to provide a retentate sample of about 0.5 ml; and

(e) contacting the retentate sample with the appropriate amount of an immunologic reagent for detecting the presence of said polypeptide or glycoprotein antigen in the retentate sample, with the proviso that when said antigen is human chorionic gonadotropin, then the immunologic reagent comprises other than pyruvic aldehyde stabilized erythrocytes sensitized to human chorionic gonadotropin with a bifunctional molecule;

the improvement which comprises contacting said membrane with a dilute solution of polyvinylpyrrolidone prior to or concurrent with ultrafiltration, wherein said polyvinylpyrrolidone has an average molecular weight greater than about 9,000 and less than about 40,000.

4,208,188

CONSOLIDATION OF COAL SLURRY

Perry J. Dick, Jr., Pittsburgh, Pa., assignor to Signet Corporation, Pittsburgh, Pa.

Filed Mar. 22, 1978, Ser. No. 888,862

Int. Cl.[2] **C10L** *5/00;* **B01D** *33/00*

U.S. Cl. 44—10 R **26 Claims**

1. A process for producing substantially clean water and consolidated slugs of fuel from coal slurry having less than about 30 percent by volume of ash and other impurities, comprising

(a) placing a quantity of the coal slurry in an enclosed chamber in which means have been provided for drainage of the water from the slurry, and

(b) subjecting the slurry to one-dimensional consolidation by the application of compressive stress, thereby producing

(i) substantially clean water, and

(ii) a consolidated uniformly-shaped slug of fuel having a water content of less than about 10 percent.

4. A product comprising a uniformly-shaped slug of consolidated coal slurry having less than about 30 percent by volume of ash and other impurities, a water content of less than about 10 percent and a density in the range of about 90 to 100 lb/ft^3.

4,208,189

MATCH SPLINTS AND MATCHES MADE THEREWITH

Robert Lyall, Bracknell; Ian Maxwell, Reading, and Valerie A. Buckle, Berkshire, all of England, assignors to Wilkinson Sword Limited, Buckinghamshire, England

Filed Feb. 23, 1979, Ser. No. 14,270

Claims priority, application United Kingdom, Feb. 28, 1978, 7404/78

Int. Cl.[2] **C06F** *3/00, 3/02, 5/00*

U.S. Cl. 44—42 **6 Claims**

1. In a method for the manufacture of friction matches, which comprises dipping a match splint in a molten wax fuel to provide thereon a wax fuel coating, dipping the match splint, before or after application of the fuel, in a bath of aqueous match head composition, thereby to form thereon a bulb of said match head composition, the improvement which comprises forming a match splint from a substantially non-porous material, applying to the splint, before or after formation of the head and along a portion of the length thereof adjacent that end of the splint on which said head is or is to be formed, a

surface coating of an adhesive, applying to that surface coating a layer of finely divided or finely chopped particulate or fibrous material, thereby to form on said substantially non-porous splint an absorbent surface coating of said finely divided or finely chopped particulate or fibrous material, and dipping the coated end of the splint in a molten wax bath, thereby to impregnate the surface coating with said wax.

2. A friction match comprising a substantially non-porous splint having a head of a friction ignitable match head composition formed on one end thereof, and adjacent said head and extending along a portion of the length of the splint an absorbent surface layer comprising a finely divided or finely chopped particulate or fibrous material bonded to the surface of the splint by a layer of adhesive, and impregnated into that absorbent surface layer a solid wax fuel for the match.

4,208,190

DIESEL FUELS HAVING ANTI-WEAR PROPERTIES

Robert E. Malec, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Feb. 9, 1979, Ser. No. 10,524
Int. Cl.[2] C10L *1/18, 1/22*
U.S. Cl. 44—53 **12 Claims**

1. As a new composition of matter, an anti-wear compression ignition fuel for use in diesel engines comprising (1) a monohydroxy alkanol having from 1 to 5 carbon atoms, and (2) a wear inhibiting amount of a straight chain aliphatic primary amine having the formula

$$RNH_2$$

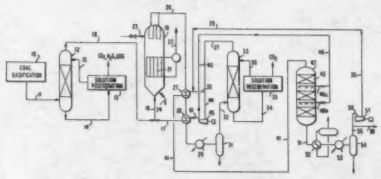
wherein R is an alkyl or alkenyl radical having from 8 to 50 carbon atoms.

4,208,191

PRODUCTION OF PIPELINE GAS FROM COAL

Morgan C. Sze, Upper Montclair, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed May 30, 1978, Ser. No. 910,823
Int. Cl.[2] C10J *3/00*
U.S. Cl. 48—210 **15 Claims**



1. In a process for producing pipeline gas from coal by effecting gasification thereof to a gas containing carbon monoxide, hydrogen, gaseous sulphur compounds and carbon dioxide, the improvement comprising:

(a) contacting said gas with an acid gas absorption solution to separate gaseous sulphur compounds and carbon dioxide therefrom;

(b) contacting said gas with a reduced iron catalyst at a temperature of from about 375° to about 550° C. and at a pressure of from about 20 to about 100 atm to produce methane, carbon dioxide and some olefins;

(c) separating carbon dioxide from the gas produced in step (b);

(d) contacting gas obtained from step (c) with a nickel catalyst at a temperature of from about 230° C. to about 600° C. and a pressure of from about 10 atm to about 70 atm to produce additional methane and convert olefins to alkanes; and

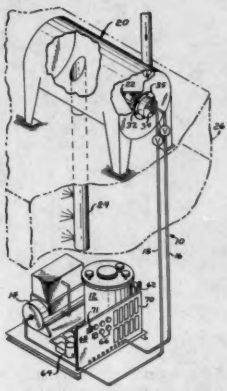
(e) employing gas from step (d) as a pipeline gas.

4,208,192

SONIC SPRAY OF H_2SD_4 IN A SWIRLING HEATED AIR STREAM

William A. Quigley, Greenwich, and Paul H. Sorenson, Fairfield, both of Conn., assignors to UOP Inc., Des Plaines, Ill.

Filed Oct. 27, 1978, Ser. No. 955,554
Int. Cl.[2] B03C *3/00*
U.S. Cl. 55—5 **17 Claims**



1. Method of injecting an acid conditioning agent into a flue gas stream containing fly ash to be conditioned to enhance the efficiency with which the fly ash can be electrostatically precipitated comprising the steps of:

passing a liquid acid conditioning agent under pressure through a first line into a nozzle holder incorporating a sonic atomizing nozzle at a temperature lower than its vaporizing temperature;

passing a gas from a first supply source under pressure through a second line into said nozzle, said nozzle incorporating means to produce sonic vibrations capable of breaking up said liquid acid into a mist plume having an average droplet size of about 10 microns;

passing a stream of hot gas from a second supply source having a temperature greater than the vaporization temperature of said liquid acid and of a value of at least about 500° F., tangentially into one end of a cylindrical chamber in which said nozzle holder and nozzle are mounted in such a manner that said stream of hot gas will travel in a helical manner and will entrain and vaporize substantially all of the acid mist plume emanating from said nozzle; and

passing the stream of hot gas containing said vaporized acid into said flue gas stream after it has traversed the length of said cylindrical chamber.

4,208,193

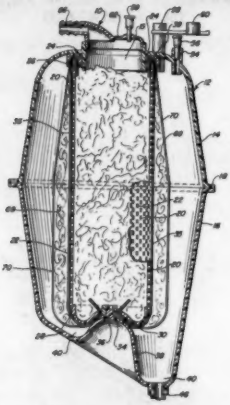
CARDIOTOMY RESERVOIR HAVING TWO-STAGE DEFOAMING MEANS

John M. Munsch, Libertyville, and Ludwig Wolf, Jr., Crystal Lake, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Nov. 9, 1978, Ser. No. 959,113
Int. Cl.[2] B01D *19/00*
U.S. Cl. 55—36 **9 Claims**

1. A blood reservoir which comprises a rigid casing, a perforated tubular member positioned within said casing and extending between the ends thereof, inlet aperture means positioned at the upper end of said reservoir in communication with the bore of said tubular member to provide fluid communication from the exterior to said bore, an outlet aperture positioned adjacent the bottom of the casing exterior to the tubular member, and gas venting means, the improvement comprising, in combination: first and second blood defoaming

means carried by said perforated tubular member, said second blood defoaming means being positioned about the exterior of said first blood defoaming means, and tubular blood filter means positioned between said first and second blood defoaming means, said tubular filter means being hydrophilic in nature



and being of fine-weave construction to retain larger bubbles to prevent their passage through the filter means while permitting microbubbles to so pass through the filter means, whereby the second defoaming means exhibits improved defoaming action for removal of the microbubbles.

4,208,194

MONITORING DEVICE

Leigh E. Nelson, Hastings, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Sep. 26, 1977, Ser. No. 836,763
Int. Cl.[2] B01D *13/00, 53/22, 59/10*
U.S. Cl. 55—158 **7 Claims**

1. In a device for measuring the amount of at least one selected component in a fluid mixture comprising body members forming a shallow chamber having an open end, a collecting layer disposed within said chamber for collecting said selected component and at least one porous attenuating layer spaced apart from said collecting layer and disposed across the open end of said chamber, the improvement wherein said collecting layer consisting essentially of a porous polytetrafluoroethylene sheet containing an effective amount of a particulate sorbent of particulate size and distribution sufficient to retain substantially all of said selected component for a time sufficient for quantitative measurement.

4,208,195

DEVICE FOR DISPERSING A RESIDUAL GAS COMPRISING A PLURALITY OF INJECTION NOZZLES

Jean-Michel Etcheverria, Biarritz; Flavien Lazarre, Pau, and Pierre Poujol, Bizanos, all of France, assignors to Societe Nationale Elf Aquitaine (Production), Paris, France

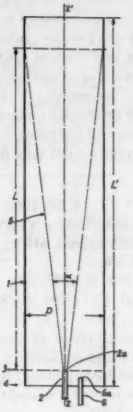
Filed May 15, 1978, Ser. No. 905,947
Claims priority, application France, May 18, 1977, 77 15416; Nov. 2, 1977, 77 32951
Int. Cl.[2] B01D *53/00*
U.S. Cl. 55—159 **4 Claims**

1. A device for dispersing in the atmosphere a residual gas, especially a residual gas containing gaseous hydrocarbons, comprising:

a mixing conduit having two open end sections,

each end section of the mixing conduit being provided with an injection installation comprising at least one injection nozzle assembly, each nozzle assembly comprising at least one nozzle opening into an injection zone defined in the vicinity of each one of the end sections of said mixing conduit,

each nozzle of each nozzle assembly being connected to a conduit which is connected, in turn, to a common source of pressurized residual gas,



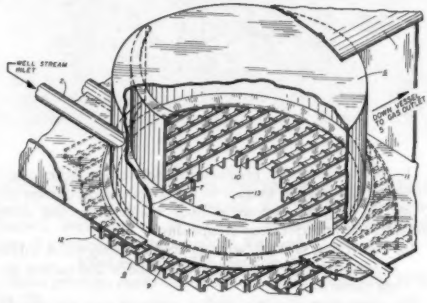
said nozzles of the various nozzle assemblies being distributed in the injection zone, and constructed in such a manner that the ratio of the square root of the passage section of said mixing conduit to the square root of the sum of the passage sections of said nozzles of the various assemblies is comprised between 35 and 300.

4,208,196

MEANS FOR CONTROL OF FLUID DISTRIBUTION IN LOW TEMPERATURE SEPARATOR

Robert W. Coggins, and Edwin H. Staley, both of Tulsa, Okla., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 30, 1978, Ser. No. 955,819
Int. Cl.[2] B01D *19/00*
U.S. Cl. 55—174 **5 Claims**



1. A system for absorbing flowing energy of a fluid stream for a low temperature separator, including,

a cylindrical shell extended horizontally,

an inlet conduit through the wall of one end of the shell,

a spinner of circumferential form mounted at and within the inlet end of the shell and arranged to receive incoming fluids from the inlet on the internal wall of the spinner and discharge all of the fluids downwardly through an exit opening of the spinner,

a plurality of parallel slats mounted at the exit opening of the spinner, the parallel slats arranged and positioned to ex-

tend across the exit opening of the spinner so that their sides form impact surfaces for all of the fluids discharged from the spinner outlet,

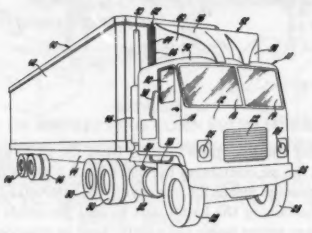
and an outlet conduit through the wall of the shell a predetermined distance from the inlet end of the shell for the gaseous portion of the fluids entering the shell.

4,208,197

AIR PRECLEANER

Peter Yakimowich, Clarkston, and Paul E. Verkerke, Pontiac, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 26, 1978, Ser. No. 919,258
Int. Cl.[2] B01D *50/00*
U.S. Cl. 55—315 **3 Claims**



1. In combination with a vehicle having an engine and a roof mounted air deflector, an air inlet assembly providing an air passage for introducing air relatively free of contaminants and moisture to the engine, said air passage having an inlet that is positioned at a predetermined distance outward from the surface of the deflector and is oriented so as to direct air from the air stream flowing past the deflector into said air passage in a direction substantially normal to the air stream to thereby exclude from said air passage that layer of air flowing immediately adjacent the surface of the deflector having a relatively large amount of contaminants and moisture as compared with the air flow outward thereof and whereby the contaminants and moisture droplets in the air that is permitted to enter said air passage tends to separate therefrom prior to such entry, said air passage further having a converging section leading from said inlet to accelerate the air flow in said air passage, and said air passage further having a circular section joined with said converging section so as to direct air flow therefrom into a circular path to decelerate the air flow in said air passage and cause contaminants and moisture droplets contained therein to move radially outward and thereby separate from the air prior to introduction of the air through said air passage to the engine.

4,208,198

STEPWISE TURNDOWN BY CLOSING HEAT EXCHANGER PASSAGEWAYS RESPONSIVE TO MEASURED FLOW

William M. Small, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

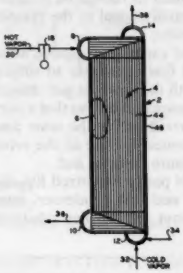
Division of Ser. No. 670,214, Mar. 25, 1976, Pat. No. 4,050,506. This application Jun. 6, 1977, Ser. No. 804,134
Int. Cl.[2] F25J *1/00*
U.S. Cl. 62—21 **12 Claims**

1. A method of controlling a heat exchanger comprising:

introducing hot gas into a first group of passageways;

introducing cold vapor into a second group of passageways spaced alternately with said first group, sparging a liquid into said second group of passageways along with said cold vapor and passing said thus sparged liquid and cold vapor in countercurrent heat exchange relationship with said hot gas;

measuring the flow of said hot gas into said first group of passageways; and



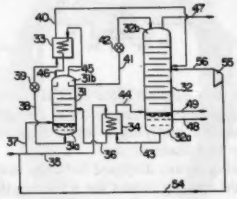
completely shutting off passageways that are selected from every second, every third and every fourth passageway of said second group of passageways responsive to a reduction in flow to said first group of passageways.

4,208,199

PROCESS OF AND SYSTEM FOR LIQUEFYING AIR TO SEPARATE ITS COMPONENT

Norio Nakazato; Norihide Saho; Sachihiro Yoshimatsu, and Michimasa Okabe, all of Kudamatsu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 821,199, Aug. 2, 1977, abandoned. This application Oct. 16, 1978, Ser. No. 951,974
Claims priority, application Japan, Aug. 11, 1976, 51-94795
Int. Cl.[2] F15J *3/04*
U.S. Cl. 62—29 **5 Claims**



1. A process for liquefying air to separate its ccomponents comprising:

dividing feed air, compressed by a compressor and cooled by a heat exchanger, into three portions;

supplying a first portion of the feed air to a low pressure column by way of an expansion turbine;

supplying a second portion of the feed air to a medium pressure column to use it as an upwardly flowing gas which is brought into gas-to-liquid contact with a returning liquid obtained in a first condenser so as to fractionate said upwardly flowing gas to obtained nitrogen gas at the top of the medium pressure column and to convert said returning liquid into liquefied air at the bottom of the medium pressure column;

supplying a third portion of the feed air to a second condenser where the feed air is subjected to heat exchange with liquefied oxygen from the low pressure column to vaporize said liquefied oxygen to obtain gaseous oxygen which is used as an upwardly flowing gas in the low pressure column brought into gas-to-liquid contact with a returning liquid from the top of the low pressure column to fractionate the gas so that the upwardly flowing gas will be taken out as an impure gas from the top of the low pressure column while the returning liquid will be con-

verted into liquefied oxygen at the bottom of the low pressure column;

expanding said liquefied air at the bottom of said medium pressure column to reduce its pressure to a low pressure level substantially equal to the pressure level in said low pressure column;

introducing said expanded liquefied air of said low pressure level to said first condenser to subject the same to heat exchange with the nitrogen gas obtained at the top of said medium pressure column, so that a part of the liquefied air can be vaporized and at the same time said nitrogen gas can be condensed for use as the returning liquid in said medium pressure column; and

introducing said partly vaporized liquefied air, after its heat exchange in said first condenser, into said low pressure column without any further substantial pressure reduction.

4,208,200

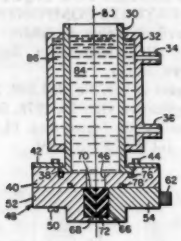
FILAMENT COATING SYSTEM

Stewart A. Claypoole, Painted Post; Merrill Lynn, Big Flats, and Roger A. Miller, Painted Post, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 8, 1978, Ser. No. 903,480

Int. Cl.[2] C03B *37/02*

U.S. Cl. 65—11 W **6 Claims**



1. Apparatus for coating a glass optical waveguide filament drawn from a region of molten material comprising

coating means for applying a layer of protective coating material to said filament, and

filament cooling means disposed between said molten material and said coating means for reducing the temperature of said filament to a value that is not detrimental to said protective coating material, said cooling means comprising a reservoir through which said filament passes, said reservoir containing a coolant liquid having a high heat of vaporization, the portion of said reservoir from which said filament exits having wiping die means for preventing said liquid from flowing therefrom and for wiping excess liquid from said filament.

4,208,201

PROCESS AND APPARATUS FOR TREATMENT OF EXHAUST GASES FROM GLASS MELTING FURNACES

Jon M. Rueck, Silver Lake, Kans., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

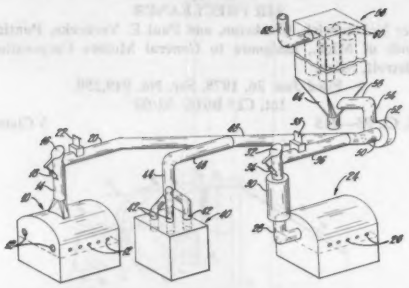
Continuation of Ser. No. 577,581, May 15, 1975, abandoned. This application Dec. 15, 1976, Ser. No. 750,777

Int. Cl.[2] C03C *1/00*; B01D *46/02*

U.S. Cl. 65—27 **5 Claims**

1. A method of controlling sodium tetraborate emissions from exhaust gases of a fossil fuel-fired glass melting furnace, said method comprising the steps of contacting said exhaust gases with particles of glass batch dust capable of reacting with the sodium tetraborate for a time sufficient to react with the sodium tetraborate to form clacium tetraborate, said batch dust being a combination of fines of the batch raw materials which are supplied to and melted in said glass melting furnace, and subsequently filtering the calcium tetraborate from the exhaust gases.

3. Apparatus for removing contaminants from flue gases emitted from a glass melting furnace, said apparatus comprising means forming an enclosed region in which a batch for producing glass is formulated and mixed for charging into the glass melting furnace, means for withdrawing air containing batch dust from said enclosed region, means for collecting and



intermixing the flue gases emitted from the glass melting furnace and the air containing the batch dust, a gas-solids separator, and passage means for conveying the intermixed flue gases and air containing the batch dust to said gas-solids separator, said passage means being sufficiently long to provide sufficient time prior to the intermixed gases and air reaching said separator for reactable components in the combined gases and air to react, whereby contaminants in the flue gases can be more readily removed by said separator.

4,208,202

N-PHENYL-SUBSTITUTED N-HETEROCYCLIC COMPOUNDS, THEIR PREPARATION AND USE IN AGENTS FOR REGULATING PLANT GROWTH

Hans Tobler, Allschwil; Werner Föry, Basel, and Rolf Schurter, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

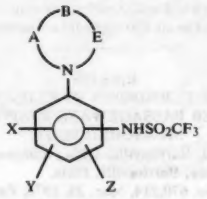
Filed Apr. 12, 1978, Ser. No. 896,970

Claims priority, application Switzerland, Apr. 15, 1977, 4702/77; Nov. 9, 1977, 13661/77

Int. Cl.[2] C07D *223/10*; A01N *9/12*

U.S. Cl. 71—88 **26 Claims**

1. A compound of the formula

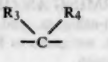


or a physiologically acceptable salt thereof, wherein

A is

B is C_1–C_4 alkylene or C_1–C_4 alkylene substituted by halogen, cyano, C_1–C_8 alkyl or C_1–C_6 alkoxy;

E is



with R_3 and R_4 each being hydrogen or C_1–C_4 alkyl; and X_1 Y and Z are independently hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 halogeno-alkyl, cyano, nitro, —CS—NH_2, benzyl or a group -$S(O)_n$-R_6, -OR_7, -$COOR_8$, -SO_2-$N(R_{10})_2$ or —$N(R_{11})_2$, in which n is a number from 0 to 2, R_6 is C_1–C_5 alkylphenyl or phenylalkyl (C_1–C_5), R_7 is C_1–C_5 alkyl, lower alkoxyalkyl, lower alkoxyalkoxyalkyl, lower alk(en)ylcarbonyl, phenyl, benzoyl, or phenyl or benzoyl substituted by lower alkyl, halogen, CN, CF_3or NO_2, R_8 is hydrogen or lower alkyl, R_{10} is lower (C_1–C_4) alkyl and R_{11} is hydrogen or C_1–C_4 alkyl.

19. The compound 1-(3′-trifluoromethanesulphonamido-4′,5′-dimethylphenyl)-pyrrolidin-2-one.

4,208,203

METHOD OF PROTECTING CORN FROM HERBICIDES

Otto L. Hoffmann, Shawnee, Kans., assignor to Gulf Research & Development Co., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 181,580, Sep. 17, 1971, Pat. No. 4,033,756. This application Feb. 5, 1973, Ser. No. 329,938

Int. Cl.[2] A01N *9/22*

U.S. Cl. 71—95 **1 Claim**

1. The method of protecting corn from injury by an S-alkyl thiocarbamate pre-emergent herbicide comprising applying to the soil in the vicinity of the corn seed an effective but non-phytotoxic amount of 1-dibromoacetyl-2,5-dimethylpyrrolidine.

4,208,204

3-HYDROXY-3-METHYLGLUTARIC ACID MONOAMIDE AND DERIVATIVES THEREOF

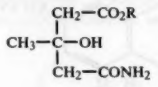
Andre H. Yavrouian, Los Angeles, Calif., assignor to Calbiochem-Behring Corp., La Jolla, Calif.

Filed Oct. 7, 1977, Ser. No. 840,120

Int. Cl.[2] A01N *9/20;* **C07C** *121/34, 121/417*

U.S. Cl. 71—97 **1 Claim**

1. A method for inhibiting the germination and growth of undesirable weed grasses comprising applying to soil subject to such grasses an effective amount, for said purpose, of a compound of the formula:



(I)

wherein R is hydrogen, lower alkyl, a metal cation selected from the group consisting of lithium, sodium, potassium, barium, calcium, magnesium, zinc and manganese, ammonium or lower alkyl ammonium.

4,208,205

HERBICIDAL BENZAMIDES

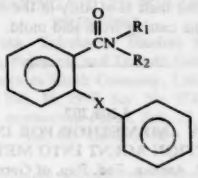
Maged M. Fawzi, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 3, 1977, Ser. No. 838,957

Int. Cl.[2] C07C *103/76*

U.S. Cl. 71—118 **28 Claims**

1. A compound of the formula



where

X is oxygen or sulfur;

R_1 is methyl or ethyl;

R_2 is alkyl of 1–4 carbon atoms, methoxy or cyanomethyl; and

R_1 and R_2 together can be $(CH_2)_4$; provided that when R_2 is alkyl of 3 or 4 carbon atoms, methoxy or cyanomethyl, R_1 cannot be ethyl.

4,208,206

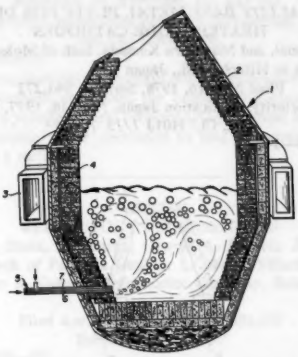
METHOD FOR PRODUCING IMPROVED METAL CASTINGS BY PNEUMATICALLY REFINING THE MELT

Frank S. Death, Carmel, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 783,431, Mar. 31, 1977, abandoned. This application Aug. 7, 1978, Ser. No. 931,625

Int. Cl.[2] G21C *5/34*

U.S. Cl. 75—60 **11 Claims**



1. A process for producing final product castings of low alloy steel and carbon steel, said castings being characterized by superior internal and surface quality, comprising the steps of:

(1) melting selected charge materials in a furnace,

(2) transferring the melt from the melting furnace into a refining vessel provided with at least one submerged tuyere,

(3) refining said melt in said refining vessel by

(a) injecting into the melt through said tuyere(s) a mixture of oxygen and at least one dilution gas, said dilution gas functioning (i) to reduce the partial pressure of the carbon monoxide in the gas bubbles formed during decarburization of the melt, (ii) to alter the feed rate of oxygen to the melt without substantially altering the total injected gas flow rate, or (iii) both (i) and (ii), and thereafter

(b) injecting a sparging gas into the melt through said tuyere(s), said sparging gas functioning to remove impurities from the melt by degassing, deoxidation, volatilization, or by flotation of said impurities with subsequent entrapment or reaction with the slag,

(4) teeming the melt into a cast product mold,
(5) permitting the melt to solidify in the mold, and
(6) removing the casting from said mold.

4,208,207

CARRIER BODY AND METHOD FOR INTRODUCTION OF A REACTION AGENT INTO METAL MELTS

Tareh El Gammal, Aachen, Fed. Rep. of Germany

Continuation of Ser. No. 732,577, Oct. 15, 1976, abandoned.
This application Sep. 20, 1978, Ser. No. 944,037
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1976, 2546103
Int. Cl.² C22C 33/08
U.S. Cl. 75—130 R 48 Claims

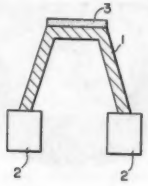
1. A carrier matrix for introduction of a reaction agent into hot metal melts, said carrier matrix consisting essentially only of an inert fibrous substance, a reaction agent, a filler and a binder, the inert substance forming a reinforcing reticular structure within the carrier matrix and making the carrier body sufficiently porous to facilitate release of the reaction agent contained within said carrier body, said filler preventing undue concentration of said reaction agent, said binder improving the cohesion of said carrier body, whereby said reaction agent is released in said hot metal melt.

4,208,208

NICKEL ALLOY BASE METAL PLATE FOR DIRECTLY HEATED OXIDE CATHODES

Akira Misumi, and Masaharu Kumada, both of Mobara, Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 16, 1978, Ser. No. 961,272
Claims priority, application Japan, Nov. 18, 1977, 52-137908
Int. Cl.² H01J 1/15, 19/06
U.S. Cl. 75—170 7 Claims



1. A base metal plate material for a directly heated oxide cathode which comprises an alloy containing rhenium in the range from 4 to 17% by weight, tungsten in the range from 1 to 6% by weight and the remainder being nickel.

4,208,209

PROCESS FOR COLD PRESSING FINELY GROUND METALS

Kamil Sor, 5 Timberline Dr., Fanwood, N.J. 07023

Filed Mar. 8, 1978, Ser. No. 884,420
Int. Cl.² B22F 1/04
U.S. Cl. 75—232 15 Claims

1. A method for consolidating metal particles into a solid unitary structure which comprises the steps of admixing a finely ground metal composition with from 0.1 to 10% by weight, based on the weight of said composition, of a phosphorous pentoxide reactive binder and subjecting the resultant mixture to compression.

4,208,210

PROCESS FOR FORMING AN OPTICAL SOUNDTRACK

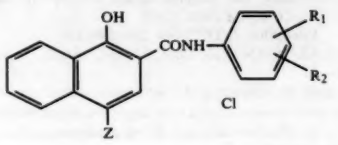
Tadao Sakai, Minami-ashigara, and Masayoshi Kawai, Fujimiya, both of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation-in-part of Ser. No. 642,629, Dec. 19, 1975, abandoned. This application Mar. 24, 1977, Ser. No. 780,885
Claims priority, application Japan, Dec. 19, 1974, 49/146088
Int. Cl.² G03C 7/24
U.S. Cl. 430—140 17 Claims

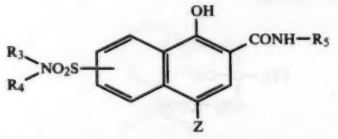
1. A process for producing an optical sound track comprising image-wise exposing the optical sound track area of a multi-layer color photographic light-sensitive material to ultraviolet rays and color photographically processing the light-senstive material, the light-sensitive material comprising

(1) a support,
(2) a group of color picture image-forming layers comprising
  (a) at least one blue-senstive silver halide emulsion layer containing at least one yellow dye-forming coupler,
  (b) at least one red-senstive silver halide emulsion layer containing at least one cyan dye-forming coupler, and
  (c) at least one green-sensitive silver halide emulsion layer containing at least one magenta dye-forming coupler, and
(3) at least one ultraviolet ray-sensitive silver halide emulsion layer as the sound track area which contains a non-diffusible silver bleach inhibitor and an infrared dye-forming coupler, said at least one ultraviolet ray-sensitive silver halide emulsion layer being positioned on said group of color image-forming layers (a), (b) and (c) or intermediate two of said color picture image-forming layers (a), (b) and (c), and

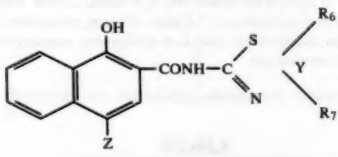
wherein the light-sensitive material contains at least one non-diffusible ultraviolet ray absorbing agent positioned between said support (1) and said ultraviolet ray-sensitive silver halide emulsion layer (3) and in at least one of said picture image-forming layers (a), (b) and (c) or in a layer on at least one of said picture image-forming layers (a), (b) and (c); wherein the infrared dye-forming coupler is a coupler selected from the group consisting of couplers represented by the following formulae II, III and IV:



(II)



(III)

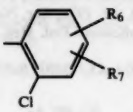


(IV)

wherein Z represents a hydrogen atom or a coupling-off group; Y represents nonmetallic atoms necessary to complete a thiazole or benzothiazole nucleus; R_1 represents a hydrogen atom or a more electron attractive group than a hydrogen atom

R_3 and R_4 each represent a hydrogen atom or an alkyl group

having 1 to 20 carbon atoms, each may be same or different, R_5 represents an alkyl group or an alkenyl group having 12 or more carbon atoms, or a



group;

R_6 represents a hydrogen atom or a lower alkyl group having 1 to 4 carbon atoms; and R_2 and R_7 each represent a ballast group having 6 or more carbon atoms, each may be bonded to the phenyl nuclei either directly or via an amino bond, an ether bond, a thioether bond, a carbonamide bond, a sulphonamide bond urea bond, an ester bond, an imide bond, a carbonyl bond or a sulphonyl bond.

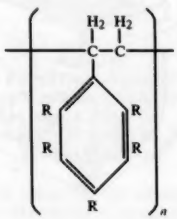
4,208,211

FABRICATION BASED ON RADIATION SENSITIVE RESISTS AND RELATED PRODUCTS

Murrae J. S. Bowden, Summit; Eugene D. Feilt, Berkeley Heights; Larry F. Thompson, Gillette, and Cletus W. Wilkins, Jr., Plainfield, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 23, 1978, Ser. No. 908,791
Int. Cl.[2] G03C *5/00*
U.S. Cl. 430—314 **25 Claims**

1. Process for fabrication of an article comprising an operation during which the article undergoing fabrication comprises an article surface and an overlying actinic processing layer, said processing layer consisting essentially of polymeric material, including the steps of (1) selectively exposing portions of the said processing layer to actinic radiation to define a pattern whereby ease of removal of the said portions of the processing layer by a developing agent is decreased, said ease of removal being dependent upon effective crosslinking of the said polymeric material resulting from exposure by the said actinic radiation; (2) treating the said processing layer with said developing agent to selectively remove material outside the said portions to produce a now patterned processing layer; (3) treating the article undergoing fabrication with an altering agent which preferentially alters regions of the said article surface corresponding with unexposed regions of the patterned processing layer, CHARACTERIZED IN THAT the said polymeric material consists of a polymer which may be regarded as containing at least 20 weight percent of at least one composition structurally represented as



in which at least one of the R substituents is a grouping represented as —R′Z in which the R′Z groupings need not be identical and in which Z is a halogen atom, and R′ is any grouping containing from 1 to 4 atoms bridging the Z halogen to the aromatic ring.

4,208,212

AQUEOUS TREATING LIQUID FOR USE IN OFFSET PRINTING

Masayuki Kuzuwata, Yokohama; Hazime Machida, Tokyo; Hiroshi Tamura, Fujisawa, and Tadashi Saito, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 16, 1978, Ser. No. 878,400
Claims priority, application Japan, Feb. 22, 1977, 52/18568
Int. Cl.[2] C09K *3/18*
U.S. Cl. 106—2 **4 Claims**

1. An aqueous treating composition, comprising water containing an effective amount of at least one complex for desensitizing an offset printing plate and forming a hydrophilic film on the nonimage area thereof, said complex being selected from the group consisting of compounds having the formula I $[M(X_1)_a](Y)_b \cdot cH_2O$, wherein M is cobalt, X_1 is NH_3, Y is an anion, "a" is 6, "b" is a number in the range of from 1 to 3, and "c" is 0 or a number in the range of from 1 to 10, the concentration of said complex being in the range of 0.1 to 30 weight percent, and at least one assistant selected from the group consisting of phosphates and phosphoric acids, the amount of said assistant being in the range of from 0.1 to 20 parts by weight, per one part by weight of said complex.

4,208,213

SHOE CREAM POLISH COMPOSITION

Karl-Hans Müller, Bruchköbel, and Roland Tailfer, Hanau, both of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 31, 1977, Ser. No. 847,363
Claims priority, application Fed. Rep. of Germany,
Int. Cl.[2] C09F *1/08*
U.S. Cl. 106—10 **7 Claims**

1. In a non-aqueous shoe cream polish composition, wherein the improvement comprises the composition containing an amount of a pyrogeneously produced hydrophobic silica effective to provide water resistance to said composition when applied to a surface.

4,208,214

REFRACTORY COMPOSITIONS

Joseph L. Stein, Pittsburgh; George A. Russell, Jr., Allison Park, both of Pa., and Gunther L. Mortl, Villach, Austria, assignors to General Refractories Company, Bala Cynwyd, Pa.

Filed Apr. 21, 1978, Ser. No. 898,689
Int. Cl.[2] C04B *35/52*
U.S. Cl. 106—56 **26 Claims**

1. A refractory composition consisting essentially of a basic refractory aggregate chosen from the group consisting of periclase, dolomite, and dead burned magnesite; oxidation-prone fibers of about 10 mm to 40 mm in length and about 0.1 mm to 1.0 mm in diameter; and a carbonaceous binder, said binder forming throughout said composition a carbon matrix to which said fibers are chemically bonded.

4,208,215

METHOD FOR ENHANCING THE CRYSTALLIZATION RATE OF HIGH PURITY AMORPHOUS SI_3N_2 POWDER BY INTIMATE CONTACT WITH A TITANIUM CONTAINING MATERIAL

Richard N. Kleiner, and Emil J. Mehalchick, both of Towanda, Pa., assignors to GTE Service Corporation, Stamford, Conn.

Division of Ser. No. 526,257, Nov. 22, 1974, Pat. No. 4,145,244.
This application Sep. 18, 1978, Ser. No. 943,032
Int. Cl.[2] C04B *35/58*
U.S. Cl. 106—73.3 **5 Claims**

1. A method for enhancing the crystallization rate of high purity fine grain amorphous Si_3N_4 powder, the method comprising carrying out a crystallization heat treatment of the

powder while the powder is in intimate contact with a titanium containing material.

4,208,216

GROUTING MATERIALS FOR CONSOLIDATION OF SOILS

Hachiro Yamaguchi, Hiroshima; Tatsuhiko Noguchi, and Kiichi Endo, both of Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 3, 1978, Ser. No. 902,974

Claims priority, application Japan, May 9, 1977, 52-52097; May 9, 1977, 52-52098

Int. Cl.[2] C09D *1/02*

U.S. Cl. 106—74 6 Claims

1. A grouting composition comprising an alkali metal silicate and a member selected from an imidosulphonic acid and an imidosulphonate.

4,208,217

METHOD OF STABILIZING AQUEOUS FINE COAL SLURRY AND PRODUCT THEREOF

John C. Anderson, Hampton Township, Allegheny County; David W. Hutchinson, Hempfield Township, Westmoreland County; Alvin A. Terchick, Monroeville Boro, and Wu-wey Wen, Plum Boro, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Sep. 25, 1978, Ser. No. 945,939

Int. Cl.[2] C04B *31/30*

U.S. Cl. 106—97 24 Claims

1. Method of stabilizing an aqueous slurry of fine coal refuse having a size of less than about 28 mesh comprising (a) intimately admixing said aqueous slurry of said refuse containing between about 30 percent and about 80 percent of solids by weight with a stabilizing additive comprising Portland cement and (b) allowing the admixture to harden.

4,208,218

VISCOSITY INCREASING ADDITIVE FOR NON-AQUEOUS FLUID SYSTEMS

Claude M. Finlayson, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed Mar. 27, 1978, Ser. No. 890,809

Int. Cl.[2] B01J *13/00*; C09K *3/00*

U.S. Cl. 106—287.25 6 Claims

1. A self-activating organophilic clay rheological composition useful as an additive for non-aqueous fluid systems which is capable of increasing the viscosity of said non-aqueous fluid systems without the addition of a polar organic dispersant, which comprises the reaction product of a material selected from the group consisting of a dibenzyl dialkyl ammonium compound wherein the alkyl group contains 14 to 22 carbon atoms and wherein 20 to 35% have 16 carbon atoms and 60 to 75% having 18 carbon atoms, and a methyl benzyl dialkyl ammonium compound or a dibenzyl dialkyl ammonium compound wherein the alkyl group contains 8 to 20 carbon atoms wherein at least 5% have 8 to 14 carbon atoms, and a smectite-type clay having a cation exchange capacity of at least 75 milliequivalents per 100 grams of said clay, and wherein the amount of said ammonium compound is from 100 to 130 milliequivalents per 100 grams of said clay, 100% active clay basis.

4,208,219

ARRANGEMENT FOR CONTROLLING THE ADDITION OF A LIQUID

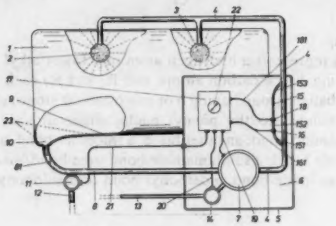
Hermann Etscheid, Neustadt, Fed. Rep. of Germany, assignor to Hermann Etscheid oHG, Neustadt, Fed. Rep. of Germany

Filed Oct. 10, 1978, Ser. No. 949,470

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1977, 2745498

Int. Cl.[2] B08B *9/08*

U.S. Cl. 134—57 R 7 Claims



3. Arrangement for controlling the addition of liquid in the cleaning of containers, especially of milk tanks, in which the cleaning is accomplished by means of a cleaning liquid which is being circulated by a circulating pump, in that the cleaning liquid is withdrawn at the lower part of the container and is again sprayed into the container by at least one spraying arrangement which is situated at a container part that is located higher, the improvement wherein a tubular measuring path which is flanked by two measuring electrodes directly introduced into the tubular measuring path is incorporated into the circulating arrangement, at which the continuous variations of the electric resistance of the liquid column respectively flowing through the tubular measuring path during the circulation are sensed by the measuring electrodes and transmitted as signals to a control element which converts the signals in a further signal which actuates a closing valve arranged at a liquid inlet conduit.

4,208,220

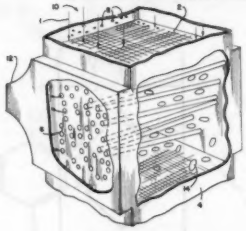
METHOD AND APPARATUS FOR CLEANING HEAT EXCHANGER TUBES MOUNTED TRANSVERSELY TO VERTICAL FLOW OF SEAWATER

Henry J. White, Hawaii Kai, Hi., assignor to The Research Corporation of the University of Hawaii, Honolulu, Hi.

Filed May 15, 1978, Ser. No. 905,925

Int. Cl.[2] B08B *1/00, 9/06*

U.S. Cl. 134—7 30 Claims



15. A method of cleaning heat exchange tubes comprising the steps of

inserting against heat exchange tubes floating balls

flowing fluid down over heat exchange tubes

carrying floating balls against outsides of the tubes

cleaning surfaces of the tubes by the floating balls

carrying the floating balls away from the tubes,

varying velocity of the downward flowing fluid

floating balls upward where the velocity of the flowing fluid is low,

carrying balls downward when the velocity of the downward flowing fluid is high.

4,208,221

STATOR CORE STRIPPING

Shelvin Rosen, Sidney, Ohio, assignor to Copeland Corporation, Sidney, Ohio

Filed Dec. 4, 1978, Ser. No. 966,277
Int. Cl.[2] B08B *3/00*
U.S. Cl. 134—19 **10 Claims**

1. A method of stripping wire from a stator having a core, wire, and hydrolyzable insulation, comprising the steps of contacting said stator with steam under conditions of elevated temperature and pressure and for a time sufficient to cause degradation of said insulation but insufficient to cause deleterious side effects or damage to the stator core, and then removing said wire from said stator.

7. The method of claim 1 including the step of heating the surface of said stator to a temperature greater than the saturation temperature of said steam prior to contacting said stator with said steam.

4,208,222

IN SITU INTERLAYER FORMATION FOR TRANSIENT LIQUID PHASE DIFFUSION BONDING

Melvin C. Barlow, East Hampton; Joseph F. Loersch, Bolton; both of Conn., and Malcolm Basche, deceased, late of West Hartford, Conn. (by Joyce O. Basche, heir), assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 27, 1977, Ser. No. 810,463
Int. Cl.[2] B23K *19/00*
U.S. Cl. 148—6 **9 Claims**

1. A method for bonding superalloy workpiece surfaces comprising:

(a) depositing a metallic coating on at least one of the surfaces to be bonded, the overall coating composition having as its basis metal the same base metal as the superalloys;

(b) boriding a portion of the metallic coating so that a working coating having an overall composition resembling that of an interlayer alloy and an overall melting temperature less than that of the superalloys is formed; and

(c) establishing contact between said surfaces and heating to above said melting temperature, the partially borided metallic coating functioning as an interlayer alloy to effect bonding.

4,208,223

METHOD OF PAINTING ALUMINUM SURFACES

Alfred F. Hofstatter, Woodland Hills, Calif., assignor to Superior Industries, Van Nuys, Calif.

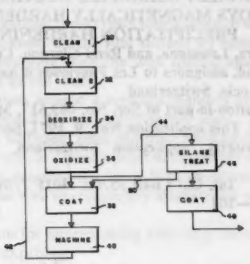
Filed Jun. 27, 1978, Ser. No. 919,727
Int. Cl.[2] C23F *7/06*
U.S. Cl. 148—6.2 **6 Claims**

1. A method for enhancing the adhesion of solvent and water base paints to the surface of aluminum which comprises:

(a) cleaning and deoxidizing the aluminum surface by contacting it with an aqueous solution of a reducing agent;

(b) oxidizing the aluminum surface to form a uniform coating of aluminum oxide thereon;

(c) incorporating in said paint from 1 to about 10 weight percent of an adhesion promoter of the formula:



$$CH_2CH(CH_2)_n-O-(CH_2)_mSi(OH)_3$$
$$\backslash\ /$$
$$O$$

wherein:

n is a whole number integer of 1 through 3; and

m is a whole number integer of 1 through 5; and

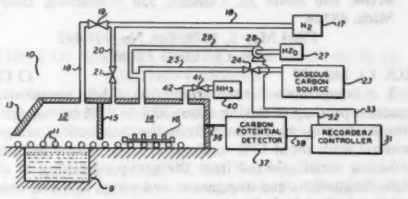
(d) coating said surface with said paint.

4,208,224

HEAT TREATMENT PROCESSES UTILIZING H_2O ADDITIONS

Carol A. Girrell, Milford, N.J., assignor to Airco, Inc., Montvale, N.J.

Filed Nov. 22, 1978, Ser. No. 963,244
Int. Cl.[2] C21D *1/48*
U.S. Cl. 148—16.5 **10 Claims**



1. A method of carburizing ferrous parts in an integral quench furnace having one or more vestibules and a hot zone comprising the steps of:

heating the hot zone to a temperature of 1350° F. or greater;

introducing a flow of nitrogen gas to each such vestibule at a flow rate sufficient to maintain oxygen levels therein below levels required to support combustion;

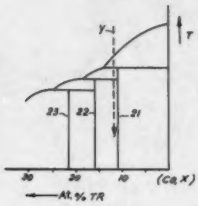
reducing the dewpoint of the hot zone to less than 0° F. during heating thereof to said temperature of at least 1350° F.;

supplying water at a flow rate of about 0.1–15 ml/min and a gaseous carbon source without a carrier gas to said hot zone to form an atmosphere therein comprised of up to about 40% nitrogen, at least 14% carbon monoxide and 40% hydrogen and in which said parts are carburized.

4,208,225
DIRECTIONALLY SOLIDIFIED DUCTILE MAGNETIC ALLOYS MAGNETICALLY HARDENED BY PRECIPITATION HARDENING

Wilfried Kurz, Lausanne, and Remi Giardon, Corseaux, both of Switzerland, assignors to Les Fabriques d'Assortiments Reunies, Le Locle, Switzerland

Continuation-in-part of Ser. No. 683,617, May 5, 1976, abandoned. This application Nov. 9, 1977, Ser. No. 849,956
Claims priority, application Switzerland, May 5, 1975, 005725/75
Int. Cl.[2] C04B *35/00*; H01F *1/04*
U.S. Cl. 148—101 **5 Claims**



1. A body of a magnetic alloy consisting essentially of a ductile phase in a magnetic matrix, the ductile phase consisting essentially of cobalt, and the magnetic phase consisting essentially of cobalt, TR and X wherein TR is at least one rare earth element or lanthanium or yttrium and X is at least one metal selected from the group consisting essentially of copper, iron, nickel, aluminum, molybdenum, and manganese wherein the limits of the cobalt, TR and X in the magnetic alloy are TR between 12 and 15 atomic percent, X between 20 and 30 atomic percent and Co between 55 and 67 atomic percent, said body exhibiting a magnetic energy product of at least 6 MGOe and a mechanical energy to rupture of at least 40 Joules/m^2.

4,208,226
ENERGY PRODUCING WASTE MATERIAL COMPOSITION

Paul A. Deardorff, 1128 Dix, Lincoln Park, Mich. 48146; Robert C. Wood, 36002 Huron River Dr., New Boston, Mich. 48164, and Sante M. Cundari, 530 Woodcrest, Dearborn, Mich. 48124

Filed May 1, 1978, Ser. No. 901,492
Int. Cl.[2] C06B *33/00*
U.S. Cl. 149—37 **12 Claims**

1. A composition for the production of heat comprising the reaction product of mixing about 50% to 95% by weight of an iron-containing by-product from the production of steel; a mineral acid; about 10% to about 25% by weight pulverulent reducing metal selected from the group consisting of aluminum, magnesium, and manganese; and water, said iron-containing by-product including iron oxide.

4,208,227
INTERNALLY STRESSED CLUB HOLDING COLLARS FOR GOLF BAGS

Wallace C. Cowan, 316 S. Detroit, Russellville, Ark. 72801

Filed Nov. 16, 1978, Ser. No. 961,098
Int. Cl.[2] A63B *55/00*
U.S. Cl. 150—1.5 R **2 Claims**

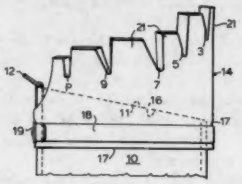
1. In combination with an elongated golf bag (**10**) having a mouth (**11**) at the upper end thereof, an internally stressed club holding collar (**14**) forming a vertical axial extension of the mouth and adapted to releasably suspend club irons from their respective heads (**22**) and within the bag, said collar being produced from

(a) a substantially rectangular equilibrized blank (**14*d***) of resilient compressible and stretchable material, said blank having a neutral stress axis (y—y) between its opposite longitudinal wall segments;

(b) one longitudinal marginal edge portion (**21**) of said blank being provided with a plurality of spaced transverse notches (W', P' and 2' thru 9') with an intervening jaw segment between each pair of adjacent notches, the opposed faces of said notches being substantially congruent to the opposite faces of said iron heads respectively;

(c) the marginal edge portion (**17**) disposed opposite the aforementioned edge portion (**21**) being bent around the outer periphery of the mouth portion to

(1) tensionally stress and increase the length of the arcuate segment (**14*b***) disposed outwardly of said neutral axis and concurrently



(2) compressively stress and reduce the length of the arcuate segment (**14*a***) disposed inwardly of said neutral axis,

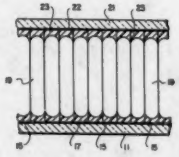
whereby the distance between the opposed faces of each notch length in said tensionally stressed segment (**14*b***) is increased, and the distance between the opposed faces of the corresponding notch lengths in the compressively stressed segment (**14*a***) is decreased, and whereby the opposed faces of the corresponding notch length in the compressively stressed segment will have lesser widths than the iron head portions inserted therein to thereby grip the respective portions, and

(d) means (**18, 19**) for maintaining said arcuate segments (**14*a*, 14*b***) around the periphery of said bag mouth portion and in said bent internally stressed condition.

4,208,228
METHOD OF MAKING BUILDING PANEL STRUCTURE

Lennart Johansson, Torildsgatan 10, 55258 Jönköping, Sweden

Filed Jul. 10, 1978, Ser. No. 922,966
Int. Cl.[2] B32B *31/00*
U.S. Cl. 156—84 **12 Claims**



1. A method of manufacturing flat, sandwich-type, composite panels comprising the steps of spreading a first layer of a mixture of solid particles and liquid resinous binder on a polished, mold base; applying a sheet of material which can be permeated by the mixture of particles and resinous binder on the surface of said first layer; allowing the resinous binder in said first layer to gel; spreading a second layer of said mixture of solid particles and liquid resinous binder over said first layer and the sheet of material which is positioned substantially at the surface of said first layer; applying one side of a core element to the surface of said second layer, said core element being made of a material having an open-cell form or, other-

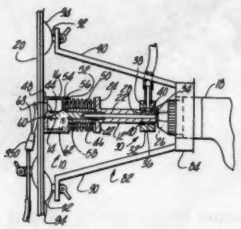
wise, being permeable to the resinous binder and solid particles of said second layer; penetrating said second layer with said one side of said core element, so that said one side of said core element is adjacent to the sheet of material at the surface of said first layer; and allowing both said first and second layers to cure to a hardened, rigid, solid state.

4,208,229

SYSTEM FOR REPAIRING PANES OF GLASS

Dante S. Giardini, 5702 Heritage Ct., Dearborn Heights, Mich. 48127

Filed Dec. 15, 1978, Ser. No. 969,655
Int. Cl.[2] B32B *35/00*; B24B *9/10*; B23B *39/22, 27/20*
U.S. Cl. 156—94 **9 Claims**



1. A method for repairing impact holes in a pane of glass comprising,

sandblasting the sharp edges around the impact hole to remove the edges containing stress cracks an amount sufficient to provide a hole in the pane through which a core drill support rod can be inserted,

core drilling around the entire damaged area at a constant force to remove it from the pane while flushing swarf radially outwardly past the face of the core drill by fluid pressure means,

beveling the sharp edges at each side of the pane around the hole formed by removing the damaged area,

cleaning and drying the periphery of the newly drilled hole and the adjacent area of the pane,

concentrically securing a plug having a diameter slightly smaller than the diameter of the newly drilled hole and having a width substantially the same as the width of the pane to an applicator disc having a diameter substantially larger than the diameter of the hole with pressure sensitive adhesive,

applying clear epoxy to the peripheral surfaces of the glass plug and newly drilled hole,

inserting the glass plug into the newly drilled hole until the applicator disc abuts against the side of the pane,

detachably securing said applicator disc to the pane,

removing the applicator disc after the epoxy has cured, and

scraping excess adhesive from the side of the pane by using a sharp blade.

4,208,230

IMPREGNATING A FIBROUS WEB WITH LIQUID

Gerald M. Magarian, Long Beach, Calif., assignor to Ameron, Inc., Monterey Park, Calif.

Continuation of Ser. No. 818,952, Jul. 25, 1977, abandoned. This application Nov. 27, 1978, Ser. No. 963,782
Int. Cl.[2] B65H *81/00*
U.S. Cl. 156—184 **23 Claims**

1. A method for impregnating a moving fibrous web having a first surface and a second surface with a liquid resin comprising the steps of:

applying a liquid resin to only the first surface of the web;

spreading the liquid resin over the first surface of the web and pressuring a portion of the spread liquid resin into the web to only partially saturate the web with the liquid resin and leave residual liquid resin on the first surface of the web by contacting the spread liquid resin with a stationary surface converging with the web in the direction of travel of the web;

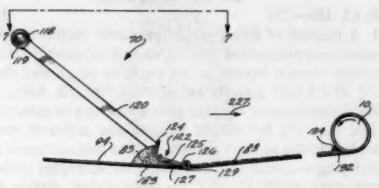
metering the residual liquid resin into a layer of substantially uniform thickness on the first surface by maintaining the surface converging with the web spaced apart from the first surface of the web;

winding the web around a rotating mandrel with the first surface disposed toward the mandrel; and

maintaining a sufficient pool of liquid resin on the first surface of the web at a pinch point between the web and the mandrel for pressing the layer of metered residual liquid resin into the web to completely saturate the web with the liquid resin.

7. An apparatus for impregnating a moving fibrous web with a liquid resin comprising:

means disposed above the top surface of the fibrous web for applying a liquid resin to only the top surface of the web;



means for spreading the liquid resin over the top surface of the web, including:

means forming a stationary surface converging with the web in the direction of travel of the web for pressuring a portion of the liquid resin into the web to only partially saturate the web and leave residual liquid resin on the web; and

means for holding the trailing edge of the converging surface out of contact with the surface of the web for metering the residual liquid resin into a layer of substantially uniform thickness on the top surface, the liquid resin in the residual layer plus liquid resin partially saturating the web being at least sufficient for completely saturating the web; and

means for pressing the layer of residual liquid resin through the web to completely saturate the web with the liquid.

4,208,231

METHOD OF MAKING MULTILAYER EDGE-SEALED RECORD CARRIER

Joachim Hoppe; Yahya Haghiri-Tehrani, both of Munich, and Wolfgang Gauch, Otterfing, all of Fed. Rep. of Germany, assignors to G.A.O. Gesellschaft für Automation und Organisation mbH, Fed. Rep. of Germany

Filed Dec. 16, 1977, Ser. No. 861,343
Claims priority, application Austria, Dec. 29, 1976, 9780/76
Int. Cl.[2] B32B *31/00*; G09F *3/02*; B42D *15/02*
U.S. Cl. 156—247 **4 Claims**

1. The method of forming a composite core constituting the information-containing layer of a multilayer, edge-welded record carrier with a printed paper insert laminated under heat and pressure between transparent films, said method comprising the steps of prepunching the paper insert in a sheet of paper; applying a separating layer to those areas, on the upper side of the sheet of paper, which surround the paper insert; positioning a thin film border on the upper side of the sheet of

paper, with the inner edge of the film border extending into overlapping relation with the paper insert at all points; positioning a backing film, provided with a separating agent corresponding with the paper insert on its upper face, against the opposite side of the paper sheet with the separating agent corresponding with the paper insert; laminating the thus juxtaposed layers so positioned relative to each other; printing the upper face of the resulting laminate; and detaching the backing film and the paper area surrounding the paper insert from the printed composite core constituted by said film border and said prepunched paper insert.

4,208,232

METHOD OF PREPARING ACTIVATED CARBON FOR FLOW IN A VACUUM

Norman J. Wagner, Pittsburgh, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Jun. 15, 1978, Ser. No. 915,833
Int. Cl.[2] B32B *1/06*
U.S. Cl. 156—276 **3 Claims**

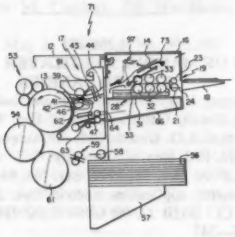
1. A method of filling plastic insulation members while the members are maintained under a vacuum comprising drying an activated carbon having an air capacity of greater than 0.21 cc./g. at 0.5 torr, a mesh size of 200×500 U.S. Sieve Series., and a density greater than 0.3 grams/cm^3 to a moisture content of less than 1% by weight wherein the activated carbon is dried by passing an inert gas stream over said activated carbon, said drying is conducted by heating the activated carbon to a temperature of 25° C.–150° C.; after drying, further heating said activated carbon to a temperature of 100° C.–350° C.; degassing the activated carbon by applying a vacuum to said activated carbon until the vacuum level applied to the activated carbon is essentially equivalent to the vacuum level in the evacuated insulation member and filling the insulation member with the degassed activated carbon.

4,208,233

LITHOGRAPHIC AND ETCHING APPARATUS

Yoshiharu Iwanaga, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 31, 1978, Ser. No. 929,418
Claims priority, application Japan, Aug. 1, 1977, 52-91451
Int. Cl.[2] C23F *1/08, 1/02*
U.S. Cl. 156—345 **9 Claims**



1. A lithographic apparatus including a master drum for holding a master sheet and etching means for etching the master sheet and having means for feeding the master sheet therethrough, characterized by comprising:

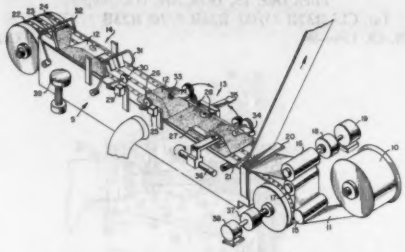
feed means disposed between the etching means and the master drum for feeding the master sheet from the etching means into engagement with the master drum, a distance from the etching means to the feed means being smaller than a length of the master sheet, the feed means including retractable stop means against which a leading edge of the master sheet is stoppingly abutable, support means disposed above the etching means for supporting a trailing edge portion of the master sheet and lifting means for lifting the trailing edge portion of the master sheet onto the support means.

4,208,234

HOSIERY BANDING APPARATUS

Burke P. Lokey, Wilbraham, Mass., assignor to Westvaco Corporation, New York, N.Y.

Filed Apr. 5, 1979, Ser. No. 27,234
Int. Cl.[2] B32B *31/00*
U.S. Cl. 156—351 **10 Claims**



1. An apparatus for successively applying labels having an adhesive coated surface and releasably adhered to a carrier web to products intermittently presented thereto wherein said labels each comprise a central portion having hook forming flaps and product banding flaps foldably attached thereto, said apparatus comprising:

(a) means for sequentially separating the labels from the carrier web and for arranging the labels with their adhesive coated side up on said apparatus;

(b) means for transporting the labels on said apparatus to a first forming station and then to a second forming station;

(c) means for retaining the labels in position at the first forming station while the hook forming flaps of the labels are folded to form partially formed labels;

(d) means for retaining the partially formed labels at the second forming station while the product banding flaps of the labels are folded to band products placed thereupon; and,

(e) means responsive to the banding of products at said second forming station for transporting a new label to said first forming station and a partially formed label to said second forming station.

4,208,235

PAPER PROCESSING MACHINE

Gary E. Stewart, Phoenix, Ariz., assignor to Trade Printers, Inc., Phoenix, Ariz.

Filed Apr. 2, 1979, Ser. No. 26,170
Int. Cl.[2] B26D *5/00*; B32D *31/00*
U.S. Cl. 156—353 **1 Claim**

1. A machine for applying spaced strips of transfer tape longitudinally along a continuous strip of paper from continuous supply rolls of said tape and said paper, comprising:

(a) a frame;

(b) means for supporting a continuous roll of transfer tape attached to said frame;

(c) a horizontal drum for supporting said continuous strip of paper, journalled for rotation in said frame;

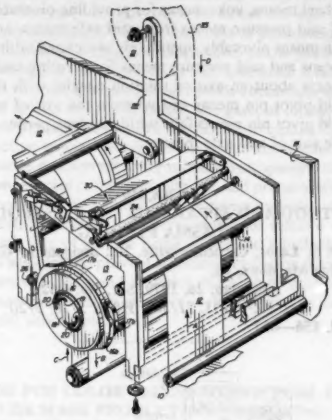
(d) first roller means journalled for rotation in said frame for guiding said paper strip from said paper supply roll into contact with said drum and for maintaining contact between said continuous paper strip and said drum for a time period sufficient to permit said transfer tape strips to be adhesively secured to said paper strip;

(e) second roller means journalled for rotation in said frame and a cutter linked to said second roller, adapted for at least two operative positions,

(i) a first operative position in which said continuous tape strip from said supply roll is pressed into adhesively secured contact with said continuous paper strip, and

(ii) a second operative position in which said continuous tape strip is severed and the free end thereof maintained spaced away from said continuous paper strip; and

(f) timing means including



(i) cam means on an end of said processing roller and rotatable therewith,

(ii) cam follower means carried by said frame and operatively associated with said cam means, and

(iii) linkage means responsive to said cam follower means for actuating said second roller means and said cutter between said first and second operative positions.

4,208,236

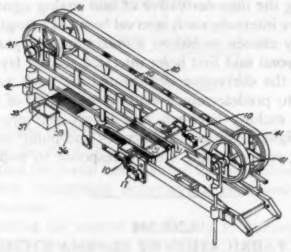
GLUE APPLICATION APPARATUS FOR USE WITH CAN LABELING MACHINES AND THE LIKE

Richard A. Santefort, South Holland, Ill., assignor to Valco Cincinnati, Inc., Cincinnati, Ohio

Filed Dec. 20, 1978, Ser. No. 971,314

Int. Cl.[2] B65C *9/04*

U.S. Cl. 156—356 **6 Claims**



1. In a labeling machine for cylindrical objects having means to apply glue to such an object in a line parallel to the axis thereof, and means for causing such object to roll over a stack of labels such that one end of the uppermost label in the stack is picked up by adhering to said line of glue on the object, and is rolled around the can as the can progresses in its rolling path; a glue applicator tube having a row of apertures for application of glue, said tube being oriented with the row of apertures facing slightly toward the feed end of the apparatus, said tube being disposed in contact with the other end of the uppermost label in the stack, a glue valve at each end of said applicator tube, means for supplying glue under pressure to said valves, sensing means to detect the passage of said cylindrical object, and control means responsive to said sensing means to cause said glue valves to open for a predetermined period of time, to apply a line of glue to the trailing end of said uppermost label, to cause it to adhere to said cylindrical body.

4,208,237

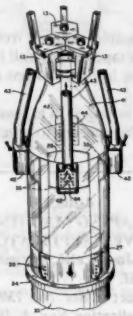
APPARATUS FOR FORMING AND APPLYING PLASTIC SLEEVES TO GLASS BOTTLES

Clarence A. Heyne, Sun City, Ariz., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 6, 1978, Ser. No. 957,790

Int. Cl.[2] B65C *3/12*

U.S. Cl. 156—446 **10 Claims**



1. In an apparatus for forming plastic sleeves and placing them about the periphery of rigid base articles, the apparatus including a mandrel, means for forming the plastic sleeve about the mandrel, means for positioning the rigid base article adjacent the mandrel at one end of the plastic sleeve, and means for telescoping the plastic sleeve onto the rigid base article, the telescoping means comprising:

a stripper sleeve having a plurality of elongated fingers disposed about the periphery of the mandrel interposed between the mandrel and the plastic sleeve;

means for moving said stripper sleeve and the plastic sleeve in one direction from the mandrel and telescoping said stripper sleeve and the plastic sleeve over the rigid base article; and

means for retracting said stripper sleeve in a direction opposite said one direction away from the rigid base article and the plastic sleeve telescopically located thereon, whereby said stripper sleeve and said fingers are removed from between the plastic sleeve and the rigid base article.

4,208,238

GANTRY FOR USE IN THE MANUFACTURE OF LAMINAR STRUCTURES

Arthur August, Smithtown, and John G. Huber, Sayville, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Division of Ser. No. 814,472, Jul. 11, 1977, Pat. No. 4,133,711. This application May 1, 1978, Ser. No. 901,460

Int. Cl.[2] B66C *5/02*

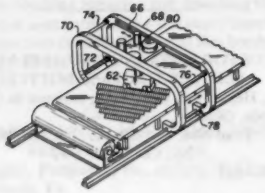
U.S. Cl. 156—510 **3 Claims**

1. For use with a facility to manufacture laminar structures a gantry means to traverse a path to be taken in such manufacture, said gantry being comprised of:

a frame having ends with side legs with columns connecting said ends to space said ends from one another, said side legs having drive means to provide for movement of said frame;

a platform movably mounted to and between said ends, said platform being movable between the ends and within the side legs from one side to the other side of said frame;

means to mount a composite tape laying a sizing device on said platform to be movable with and relative to said platform, said composite tape laying and sizing device



including a rotatable support from said platform for a housing having a tape feeding roll for a tape with a separator backup, a tape laydown means and a separator take-up reel; and

means operatively arranged in at least some of said side legs to operate said drive means to give controllable motion to said gantry.

4,208,239

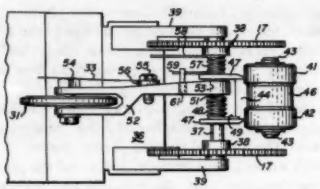
DRY WALL TAPING MACHINE HAVING AN IMPROVED APPLICATOR HEAD

Harold M. Lass, San Jose, Calif., assignor to Corban Industries, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 739,518, Nov. 8, 1976, abandoned. This application Nov. 4, 1977, Ser. No. 848,729

Int. Cl.[2] **B44C** *7/02*

U.S. Cl. 156—575 **5 Claims**



1. In a dry wall taping tool for applying tape to elongated seams between adjoining sections of dry wall:

tool means having an elongated body portion to be grasped by the operator for movement along the seam by the operator and for applying tape over the seam to be taped;

drive wheel means rotationally coupled to said tool means for engagement with the tape and for pressing the tape into engagement with the wall and for pulling the tape from a tape supply associated with said tool means as said drive wheel means moves along the seam to be taped;

pressure means as a separate element from said drive wheel means for coupling to said tool means in pivotable relation relative to said elongated body portion of said tool means for pivoting about a first pivot axis extending generally laterally to the axis of elongation of said elongated body portion and generally parallel to the wall and for engagement with the tape as pulled by said drive wheel means from the supply and for pressing the tape into engagement with the wall, said pressure means being additionally pivotable relative to said elongated body portion of said tool means about a second pivot axis extending generally laterally of the axis of elongation of said body portion and generally perpendicular to said first pivot axis for permitting said pressure means to pivot when coupled to said tool means for applying pressure laterally across the tape while the longitudinal axis of said elongated body portion of said tool means is canted at an angle to the plane normal to the plane of the wall and intersecting the plane of the wall along the seam to be taped; and

wherein said drive wheel means comprises a pair of axially separated drive wheel portions and including an axle means coaxial with the axis of revolution of said drive wheel means, yoke means for providing pivotable support of said pressure means from said axle means, and a pivot pin means pivotably operatively associated with said yoke means and said pressure means for pivoting said pressure means about an axis of rotation coaxial with the axis of said pivot pin means and wherein the axis of rotation of said pivot pin means falls within a plane perpendicular to the axis of said axle means.

4,208,240

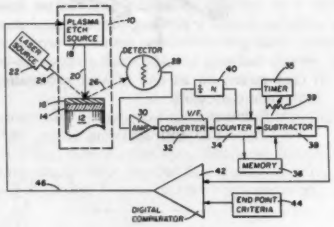
METHOD AND APPARATUS FOR CONTROLLING PLASMA ETCHING

Thomas S. Latos, Carpentersville, Ill., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Jan. 26, 1979, Ser. No. 6,627

Int. Cl.[2] **H01L** *21/306;* **H03K** *5/18, 5/20*

U.S. Cl. 156—627 **4 Claims**



1. A method for etching a first layer of material to expose an underlying layer of a second material, comprising the steps of:

exposing said first layer to an etching medium;

projecting a beam of coherent radiation onto the surface of said first layer, and in sequence said second layer, during etching;

detecting radiation reflected from said first or second layer and producing a first analog signal in response thereto;

determining the time derivative of said analog signal during successive intervals, each interval being of a length in time selectably chosen to ensure a maximum acceptable overetch beyond said first layer into said second layer;

comparing the derivative determined for each successive interval to predetermined criteria indicative of the end-point of etching between said layers and providing a control signal upon achievement of end-point; and

terminating said exposing step in response to said control signal.

4,208,241

DEVICE FABRICATION BY PLASMA ETCHING

William R. Harshbarger, Bethlehem, Pa.; Hyman J. Levinstein; Cyril J. Mogab, both of Berkeley Heights, N.J., and Roy A. Porter, Whitehall, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 31, 1978, Ser. No. 929,549

Int. Cl.[2] **H01L** *21/306*

U.S. Cl. 156—643 **26 Claims**

1. Process for fabrication of an article comprising at least one operation during which the article undergoing fabrication comprises a surface of material to be etched within selective regions, during which operation the article undergoing fabri-

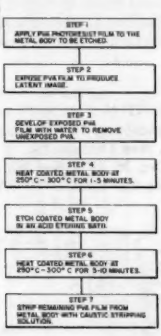
cation includes an overlying process layer with apertures corresponding with the said regions, wherein the said article is maintained within a plasma environment contained within an apparatus, the plasma resulting from imposition of an electrical field across a gaseous mixture between two electrodes, the said plasma being characterized by an electrical power and a total pressure, etching being primarily due to chemical reaction with the said material to be etched, etching being sufficiently selective to remove a desired thickness below the said article surface while retaining sufficient thickness of processing layer to prevent substantial attack of the surface below portions of the said processing layer which are not apertured, characterized in that the said gaseous mixture yields chemically distinct identifiable species derived from the said gaseous mixture, said mixture comprising two gaseous reactants corresponding with a first effective species denoted primary etchant species and a second species denoted effective recombinant species, the said recombinant species combining with the said primary effective etchant species in the vicinity of processing material at apertures, thereby lessening the lateral etch rate relative to the vertical etch rate of surface being etched, in which the said pressure is sufficient to prevent significant radiation damage to the said article surface and in which the ratio of the said two gaseous reactants is set to result in etching which is substantially ideally anisotropic.

4,208,242

METHOD FOR COLOR TELEVISION PICTURE TUBE APERTURE MASK PRODUCTION EMPLOYING PVA AND REMOVING THE PVA BY PARTIAL CARMELIZING AND WASHING

Pamela Zampiello, Boxborough, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Oct. 16, 1978, Ser. No. 951,908
Int. Cl.[2] C23F *1/02*; G03C *5/00*
U.S. Cl. 156—659.1 **8 Claims**


STEP 1
APPLY PVA PHOTORESIST FILM TO THE METAL BODY TO BE ETCHED.
STEP 2
EXPOSE PVA FILM TO PRODUCE LATENT IMAGE.
STEP 3
DEVELOP EXPOSED PVA FILM WITH WATER TO REMOVE UNEXPOSED PVA.
STEP 4
HEAT COATED METAL BODY AT 250° C.- 300° C. FOR 1-5 MINUTES.
STEP 5
ETCH COATED METAL BODY IN AN ACID ETCHING BATH.
STEP 6
HEAT COATED METAL BODY AT 250° C.- 300° C. FOR 5-10 MINUTES.
STEP 7
STRIP REMAINING PVA FILM FROM METAL BODY WITH CAUSTIC STRIPPING SOLUTION.

1. A method of forming an etched pattern in a metal body comprising the steps of:

(a) coating the metal body with a film of a photoresist composition comprising polyvinyl alcohol and ammonium dichromate,

(b) exposing the coated metal body to ultraviolet light to produce a latent image in the film,

(c) washing the exposed coated metal body to remove therefrom the unexposed film,

(d) heating the metal body and remaining film at a temperature of from about 250° C. to about 300° C. for a period sufficient to harden the remaining film to attack by aqueous acid,

(e) etching the coated metal body,

(f) heating the etched metal body and remaining film at a temperature of between about 250° C. and 300° C. for a period sufficiently to partially caramelize the retaining film, and

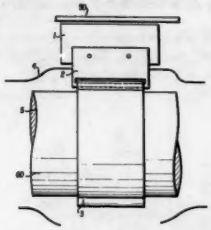
(g) washing the coated etched metal body to remove the partially caramelized film.

4,208,243

THIN FILM TREATMENT APPARATUS

Karl Knotik, Eisenhut, and Peter Leichter, Vienna, both of Austria, assignors to Oesterreichische Studiengesellschaft für Atomenergie G.m.b.H., Vienna, Austria

Filed Jul. 5, 1978, Ser. No. 922,175
Claims priority, application Austria, Jul. 13, 1977, 5023/77
Int. Cl.[2] B01D *1/24*
U.S. Cl. 159—6 W **8 Claims**



1. A thin film evaporator, comprising:

a rotor having a shaft and a rotationally symmetrical wall arranged about said rotor,

said rotor having essentially radial, elastically resilient scraper elements having a base and extending nearly up to the region of said wall,

said scraper elements having no contact with the wall and each of said scraper elements having a blade configuration,

means at the rotor for connecting each of said scraper elements at its base with the rotor, and

means for surrounding said connecting means and said rotor with an elastomeric material.

4,208,244

ASBESTOS DISPERSIONS

Philip H. Taylor, Rochdale, England, assignor to TBA Industrial Products Limited, Manchester, England

Continuation-in-part of Ser. No. 660,431, Feb. 23, 1976, abandoned. This application Dec. 16, 1977, Ser. No. 861,345
Claims priority, application United Kingdom, Mar. 8, 1975, 9751/75
Int. Cl.[2] C03B *37/00*
U.S. Cl. 162—3 **8 Claims**

1. A dispersion of asbestos fiber in an aqueous medium consisting essentially of water, soap and from 25 to 100 percent molar excess of free fatty acid, said excess being calculated on the amount of fatty acid combined in the soap, said fatty acid having a chain length of at least 12 carbon atoms.

4,208,245

PYROLYSIS OF SPENT PULPING LIQUORS

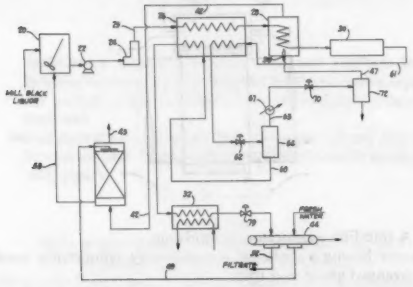
John J. Watkins, Pensacola, Fla., and Winfried G. Timpe, deceased, late of Pensacola, Fla. (by Ursula H. Timpe, executrix), assignors to St. Regis Paper Company, New York, N.Y.

Continuation of Ser. No. 765,086, Feb. 3, 1977, abandoned. This application Sep. 7, 1978, Ser. No. 940,174
Int. Cl.[2] D21C *11/14*
U.S. Cl. 162—31 **17 Claims**

1. In the hydropyrolysis reaction of waste liquor resulting from the pulping of a vegetative fibrous structure which hydropyrolysis reaction includes the heating of the liquor under high temperatures and pressures to produce a reaction product including a char-slurry mixture, the improvement comprising

the process of reducing the pressure of the reaction product to a pressure lower than the pressure of the hydropyrolysis reaction which causes noncondensable organic gases to vaporize and separate from the char-slurry mixture, combusting the noncondensable organic gases to produce materials including sulfur dioxide, separating the char-slurry mixture into a first filtrate and a char, washing the char with wash water to produce a second filtrate which includes sodium carbonate, mixing the second filtrate with the products of combustion of the noncondensable organic gases which include sulfur dioxide to produce a treated second filtrate which includes sodium bisulfite, and mixing the treated second filtrate with the waste black liquor prior to its subjection to the hydropyrolysis reaction.

13. In the hydropyrolysis reaction of waste liquor resulting from the pulping of a vegetative fibrous structure which hydropyrolysis reaction includes the heating of the liquor under high temperatures and pressures to produce a reaction product including a char-slurry mixture, the improvement of reducing the organic carbon and sodium bicarbonate content of the liquid component of the char-slurry mixture and reducing the sulfur content of the char including the steps of: introducing the reaction product into a first separation chamber through a first pressure reducing valve to reduce the pressure a first amount and whereat vapors pass overhead and the char-slurry mixture is removed from the bottom, transporting the char-slurry mixture to a first filter through a second pressure reducing valve which reduces the pressure to about atmospheric pressure and at said first filter the char is separated from the slurry to produce a filtrate which is usable in producing a pulping liquor.



4,208,246

METHOD OF PREPARING ASBESTOS DIAPHRAGMS FOR ELECTROLYSIS CELL

Shotaro Kiga; Naoshi Yoshida; Kenichi Edahiro, all of Nakago, and Tadashi Sakata, Arai, all of Japan, assignors to Nippon Soda Company Limited, Ohtemachi, Japan

Filed Feb. 21, 1978, Ser. No. 879,229
Int. Cl.[2] C25B *13/00*
U.S. Cl. 162—106 **2 Claims**

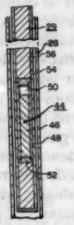
1. In a method of preparing diaphragms of deposited fibers consolidated by the use of a polymer emulsion comprising the steps of dispersing a polymer emulsion into asbestos fibers suspended in an aqueous suspension medium, and the step of depositing the polymer particles as well as the asbestos fibers on a metal screen cathode by means of filtration, the improvement wherein said suspension medium is an aqueous solution of a suspending agent selected from the group consisting of cellulose ethers, polyethylene glycol having a molecular weight of more than about 100,000 and polypropylene glycol having a molecular weight of from about 200 to about 700, there being from about 0.5 to about 10 g of suspending agent per liter of water, and drying the deposited particles and asbestos fibers at a temperature of under 100° C., whereby the polymer becomes adhesive and binds the asbestos fibers.

4,208,247

NEUTRON SOURCE

Albert J. Impink, Jr., Murrysville Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 15, 1977, Ser. No. 824,596
Int. Cl.[2] G21C *17/00*
U.S. Cl. 176—19 R **4 Claims**



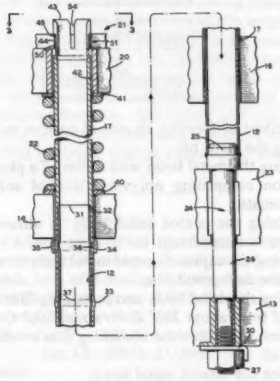
2. A thermal nuclear reactor comprising:
   a. a reactor vessel;
   b. a neutron detector disposed externally of said vessel;
   c. a spontaneous fast neutron emitting source and control element rectilinearly movable within said vessel, said element including a neutron source which spontaneously emits fast neutrons through (α,n) reactions of sufficient strength to be detected by said detector, said source being encapsulated within a sealed enclosure, said enclosure also bounding a plenum in fluid communication with said source, and a sealed cladding encapsulating said enclosure, said cladding also bounding a neutron absorbing control material substantially black to thermal neutrons, said neutron absorbing control material encapsulating said neutron source and said enclosure; and
   d. a plurality of vertical coextending fuel assemblies arranged within said vessel to form a nuclear core, one of said assemblies having a guide tube for slidingly receiving said neutron source and control element.

4,208,248

FUEL ASSEMBLY WITH A REMOVABLE END FITTING

Felix S. Jabsen, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Oct. 26, 1977, Ser. No. 845,767
Int. Cl.[2] G21C *3/30, 7/08*
U.S. Cl. 176—78 **3 Claims**



1. In combination with a fuel assembly for a nuclear reactor having a plurality of parallel fuel rods and at least one control rod guide tube maintained in a transversely spaced relationship

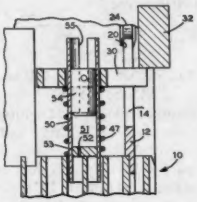
by means of grid structures through which the fuel rods and guide tube extend, and end fittings engaging the guide tube, improved end fitting means for installing and removing an end fitting as a unit comprising: a hollow cylindrical sleeve, operatively connected to an end of the guide tube in axial alignment therewith, having an end portion extending beyond the end fitting; a cellular grill and a cellular spider assembly, each extending transversely of the sleeve, in longitudinally spaced relationship; bearing means, fixedly positioned on the sleeve, upon which the grill bears for transfering loads between the grill and the sleeve; releasable lock means, disposed superjacent to the spider assembly, selectively engaged with the end portion of the sleeve for restricting movement of the spider assembly beyond the sleeve end portion; spring means, interposed between the grill and the spider assembly, for respectively biasing the grill and spider assembly against the bearing means and lock means; said lock means including a cellular lattice, the lattice sides of at least one of the cells engaging adjacent surfaces of the sleeve end portion; said sleeve end portion having a circumferential groove formed in the outer surface thereof for receiving the adjacent lattice sides to lock the lock means to the sleeve; said lattice sides disposed on the spider assembly for radial displacement relative to the sleeve between a locking position and a disengaged position so as to permit movement of the lock means, spider assembly, spring means and grill, as a unit, relative to the sleeve.

4,208,249

HYDRAULIC SEISMIC SUPPORT FOR NUCLEAR FUEL ASSEMBLY

Felix S. Jabsen, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Dec. 15, 1977, Ser. No. 861,062
Int. Cl.[2] G21C *3/30, 7/08*
U.S. Cl. 176—78 **6 Claims**



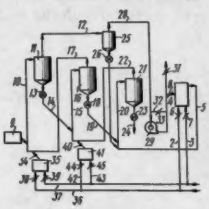
1. In combination with a fuel assembly for a nuclear reactor of the type having a plurality of long and slender fuel rods, each of said rods having two ends, said rods being spaced from each other and generally parallel to each other in the lengthwise direction, the improvement comprising a cellular grill engaging one of the ends of each of the fuel rods, all of said grill engaged ends being adjacent to each other at the lengthwise rod ends, a hollow guide post coupled on one end to the grill for movement therewith, said guide post having at least one lengthwise slot-formed therein, said slot extending from the end of the guide post that is spaced from the grill through a portion of the guide post length, a plate mounted within the guide post for movement therewith, a pad disposed generally transverse to the guide post slot, said pad having an aperture formed therein to receive the guide post and to accommodate movement of the guide post in a lengthwise direction relative to said pad, and a plunger within the guide post and secured to the pad, said plunger progressively blocking and unblocking the guide post slot in response to relative motion between the plunger and the guide post.

4,208,250

METHOD OF HEATING MULTI-FRACTIONAL MATERIALS AND APPARATUS FOR IMPLEMENTATION

Boris I. Babanin, ulitsa Samoletnaya, 9, korpus 2, kv. 30; Vladimir D. Glyanchenko, ulitsa Belinskogo, 167, kv. 79, both of Sverdlovsk; Grigory M. Grechanichenko, Pushkinsky viezd, 7, kv. 16, Kharkov; Leonid I. Erkin, ulitsa Malysheva, 70, kv. 36, Sverdlovsk; Evgeny M. Litvin, Pushkinsky viezd, 7, kv. 5; Daniil D. Matskevich, ulitsa Kolomenskaya, 7, kv. 2, both of Kharkov; Petr Y. Nefedov, ulitsa Titova, 18, kv. 7, Sverdlovsk; Oleg N. Pankratiev, ulitsa Ivanova, 12/16, kv. 61, Kharkov; Evgeny V. Dobrovolsky, Pushkinsky viezd, 7, kv. 8, Kharkov; Anatoly S. Petrukhno, ploschad Rozy Ljuxemburg, 5, kv. 26, Kharkov, and Vladlen M. Frumkin, ulitsa Anri Barbjusa, 6, kv. 29, Kharkov, all of U.S.S.R.

Continuation of Ser. No. 444,522, Feb. 21, 1974, abandoned.
This application Feb. 25, 1976, Ser. No. 661,445
Int. Cl.[2] C10B *49/00*
U.S. Cl. 201—10 **7 Claims**



1. An apparatus for use in heating multi-fractional materials containing solid particles of different sizes continuously entrained in a recirculated carrier gas, in which a heating zone of maximum temperature and at least one heating zone of comparatively low temperature are established, said apparatus comprising: means for producing a heat carrier gas pressure, at least two heaters, one of which is adapted to heat the materials to a maximum temperature, each heater comprising a supply tube whereby the materials to be heated and the heat carrier are supplied to said heaters; an additional means incorporated in each heater, except the heater adapted to heat the materials to the maximum temperature, and suitable for producing a heat carrier having a higher temperature than that of the heat carrier obtained from the immediately following heater in the process of heating, said additional means being connected to the supply tube carrying the materials to be heated and the heat carrier upstream of the point at which the materials to be heated enter said tube; means for separating heated materials from waste heat carrier and connected to the tube carrying the materials to be heated and the heat carrier downstream of the point at which said materials and heat carrier enter said tube; a tube for discharge of heat carrier and a tube for discharge of heated materials connected in parallel relationship to said separating means, said means for providing said heat carrier gas pressure being connected upstream of said zone of maximum temperature and downstream of the zone of comparative low temperature for recycling the heat carrier gas between said heating zones.

4,208,251

PROCESS AND APPARATUS FOR PRODUCING NONAQUEOUS COKE SLURRY AND PIPELINE TRANSPORT THEREOF

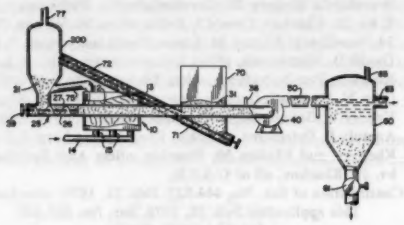
Ross H. Rasmussen, R.F.D. #2, Hooper, Nebr. 68031

Filed Jun. 19, 1978, Ser. No. 916,514
Int. Cl.[2] C10B *47/18;* F17D *1/00*
U.S. Cl. 201—14 **15 Claims**

1. A process comprising:

heating coal in a substantially air-free environment to liberate volatile materials and produce coke,

condensing in the presence of the coke at least some of the volatile materials so liberated to liquefied products and dispersing the coke therein to form a coke slurry,



feeding the coke slurry to a slurry pipeline, and

pumping the coke slurry through the pipeline to a destination.

4,208,252

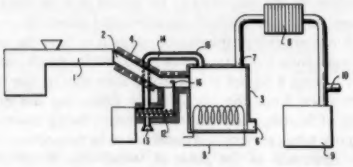
APPARATUS FOR TREATMENT OF RUBBER AND PLASTIC WASTES

Masaaki Yoshida; Masao Watanabe; Kimio Tohma, and Mitsuhiko Noda, all of Osaka, Japan, assignors to Sumitomo Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 512,799, Oct. 4, 1974, Pat. No. 3,984,288. This application May 4, 1976, Ser. No. 683,153

Int. Cl.[2] C10B *1/06, 1/08, 27/00*

U.S. Cl. 202—105 **4 Claims**



1. An apparatus for treatment of rubber and plastic wastes, comprising:

(1) an extruder for controlled heating and melting of rubber and plastic wastes, said extruder kneading the molten wastes and extruding them, means to heat said extruder and control means to regulate said means to heat said extruder;

(2) a decomposing means coupled to said extruder and receiving the melted rubber and plastic wastes from the extruder, said decomposing means having means for heating in a controlled manner the melted wastes therein to form decomposed products;

(3) a dry-distilling means coupled to said decomposing means, said dry-distilling means having controlled heating means for gasifying said decomposed products of the decomposing means by dry-distillation; and

(4) a cooling means coupled to said dry-distilling means for receiving the dry-distilled products to separate liquid materials from gaseous materials wherein the temperature of said cooling means is individually controllable.

4,208,253

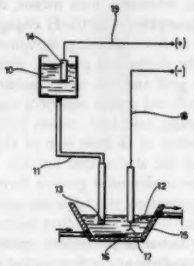
METHOD FOR MEASURING THE CONCENTRATION OF SODIUM IN A FLOW OF MERCURY-SODIUM AMALGAM

Leonardo Formaro; Luciano Cavalli; Artemio Gellera, and Marco Fraschini, all of Milan, Italy, assignors to Euteco S.p.A., Milan, Italy

Filed Sep. 14, 1978, Ser. No. 942,238

Int. Cl.[2] G01N *27/46*

U.S. Cl. 204—1 T **14 Claims**



1. A method for continuously measuring the sodium metal concentration in a flow of mercury-sodium amalgam, which comprises continuously flowing an aqueous solution of sodium chloride through a conduit of electrically insulating material terminating with a porous member immersed in the flow of the mercury-sodium amalgam, said solution being passed through said conduit at a rate such as to ensure continuous renewal of the interface between the solution and the amalgam and of at least 4 mil per hour and per cm^2 of surface area of contact between the surface of the porous member and the amalgam, and monitoring the electromotive force generated between said amalgam and a calomel or silver-silver chloride reference electrode located within said conduit and in contact with said solution, said sodium metal concentration being a univocal function of said electromotive force.

4,208,254

METHOD OF PLATING AN IRON-COBALT ALLOY ON A SUBSTRATE

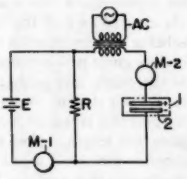
Norio Mitsumoto; Satoshi Ichioka, and Shinjiro Takeuchi, all of No. 3583, Shimo-Sasame, Toda City, Saitama Prefecture, Japan

Continuation-in-part of Ser. No. 781,463, Mar. 25, 1977, abandoned. This application Aug. 1, 1978, Ser. No. 929,988

Claims priority, application Japan, Sep. 22, 1976, 51-114203; Oct. 6, 1976, 51-120046; Nov. 24, 1976, 51-140946

Int. Cl.[2] C25D *3/56*

U.S. Cl. 204—43 T **9 Claims**



1. In a method of electroplating an iron-cobalt alloy on a substrate wherein the iron-cobalt alloy consists of 7.5–55% by weight of iron and 92.5–45% by weight of cobalt and is deposited on the substrate in a plating bath by applying an electrolytic current of a modulated current thereto, the improvement

which comprises using, as the plating bath, an aqueous bath containing 0.5–200 g/l of any one of fluoride, borofluoride, silicofluoride and acidic fluoride and having a pH of 0.4–4.0.

4,208,255

PROCESS AND DEVICE FOR THE PRODUCTION OF METAL-COMPLEX COMPOUNDS SUITABLE FOR ELECTROLESS METAL DEPOSITION

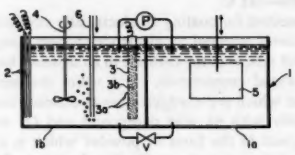
Fritz Stahl, Am Kehn, and Horst Steffen, Geldern, both of Fed. Rep. of Germany, assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed Mar. 13, 1978, Ser. No. 885,649

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1977, 2713392

Int. Cl.² C25B *3/12*

U.S. Cl. 204—72 **17 Claims**



1. A method of forming an aqueous solution of a copper-complex compound useful in the electroless deposition of said copper from an electroless copper deposition solution, the method comprising:

(i) providing an aqueous solution comprising a complexing agent for copper;

(ii) immersing in said solution at least one anode comprising copper and at least one cathode, said anode and cathode being connected to an adjustable current source;

(iii) applying a current to said anode and cathode from said current source to create a voltage difference therebetween at least sufficient to dissolve copper from said anode into said solution, and thereby to form a soluble complex compound of copper and said complexing agent therein; and

(iv) deposition copper from said solution onto said cathode in a total amount which is less than that dissolved at said anode, to provide an aqueous solution enriched in said soluble copper-complex compound.

4,208,256

FLUID PUMPING CONTROL METHOD AND APPARATUS FOR MACHINE TOOLS

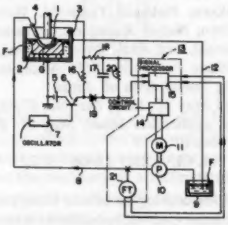
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohamashi, Japan

Filed Jan. 31, 1979, Ser. No. 8,093

Claims priority, application Japan, Feb. 8, 1978, 53-13768[U]

Int. Cl.² C25F *3/00*

U.S. Cl. 204—129.2 **8 Claims**



1. A method of controllingly supplying a machining fluid to a machining zone in an electroerosion machine having a reservoir for the machining fluid, a fluid conduit connecting between said reservoir and said machining zone, an electric motor and a pump with a rotor adapted to be driven by said electric motor, said method comprising the steps of:

applying an input to said electric motor for driving said pump to feed said machining fluid from said reservoir to said machining zone through said conduit;

sensing, during a given course of machining operation, a machining current passing between a tool electrode and a workpiece across a machining gap constituting said machining zone flushed with said machining fluid; and

modifiying said input to said electric motor for controlling the output pressure of said pump to regulate the rate of delivery of said machining fluid to said machining zone.

4,208,257

METHOD OF FORMING AN INTERCONNECTION

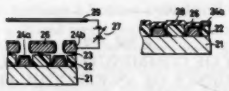
Yoshio Hom-ma, Hachioji; Hisao Nozawa, Hinodemachi; Akira Sato, and Seiki Harada, both of Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 3, 1979, Ser. No. 708

Claims priority, application Japan, Jan. 17, 1978, 53-2796

Int. Cl.² C25F *3/02, 3/14;* C23C *15/00*

U.S. Cl. 204—129.65 **16 Claims**



1. A method of forming an interconnection comprising (i) the step of forming on a metalization substrate a mask made of molybdenum or a molybdenum alloy, (ii) the step of etching an exposed surface of said metalization substrate, thereby to form depressions of predetermined pattern in the exposed surface of said metalization substrate, (iii) the step of depositing a metal layer for interconnection metalization onto the etched surface of said metalization substrate and onto said mask, and (iv) the step of subjecting said mask to electrolytic etching, thereby to oxidize and dissolve out said mask and to strip off and remove the metal layer deposited on said mask.

4,208,258

METHOD FOR THE RECOVERY OF MERCURY AND OTHER HEAVY METAL IONS FROM A LIQUID STREAM

Edward N. Balko, 3231 Maxwell Ave., Trenton, and Shyam D. Argade, 22341 Foxcroft Rd., Woodhaven, both of Mich. 48183

Continuation of Ser. No. 742,737, Nov. 17, 1976, abandoned. This application May 30, 1978, Ser. No. 910,560

Int. Cl.² C25C *1/16*

U.S. Cl. 204—130 **4 Claims**

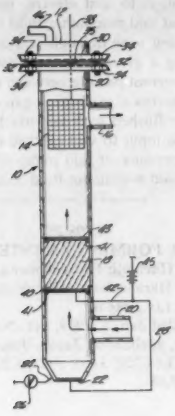
1. A process for removing small amounts of mercury from an aqueous electrolyte solution containing sodium chloride which comprises the steps of

recycling said solution through a chamber while subjecting the solution to the action of a direct current maintained between an anode and a cathode bed both located above the lower portion of the chamber,

said cathode bed being below the anode and comprised of conductive fibers extending throughout a complete cross-section of the chamber,

whereby dissolved mercury is electrodeposited from said

solution in the cathode bed and drops therefrom by gravitational force,



collecting mercury in the bottom of said chamber, and periodically removing the mercury from the bottom of the chamber.

4,208,259

TREATMENT OF COMMINUTED OATS UNDER THE INFLUENCE OF AN ELECTRIC FIELD

Richard W. Oughton, Odessa, Canada, assignor to Du Pont of Canada, Limited, Montreal, Canada

Filed May 3, 1979, Ser. No. 35,645

Claims priority, application United Kingdom, May 9, 1978, 18542/78

Int. Cl.[2] **B03C** *5/00;* **A23J** *1/12*

U.S. Cl. 204—180 R **15 Claims**

1. A process for the separation of a comminuted oat fraction from an admixture thereof with an aliphatic hydrocarbon solvent containing from 5 to 8 carbon atoms or a normally liquid chlorofluorocarbon containing 1 or 2 carbon atoms, comprising the steps of:

(a) subjecting the admixture to the influence of a high voltage d.c. electric field, said admixture being in the form of a slurry and said electric field being formed between an anode and a cathode, and thereby depositing at least part of the comminuted oat fraction on at least the anode, and

(b) separating the part so deposited from said admixture.

4,208,260

TREATMENT OF COMMINUTED PROTEINACEOUS MATERIAL UNDER THE INFLUENCE OF AN ELECTRIC FIELD

Richard W. Oughton, Odessa, Canada, assignor to Du Pont of Canada, Limited, Montreal, Canada

Filed May 3, 1979, Ser. No. 35,646

Claims priority, application United Kingdom, May 9, 1978, 18540/78

Int. Cl.[2] **B03C** *5/00;* **A23J** *1/12*

U.S. Cl. 204—180 R **23 Claims**

1. A process for the separation of a comminuted fraction of proteinaceous material from an admixture thereof with an aliphatic hydrocarbon containing 5 to 8 carbon atoms or a normally liquid chlorofluorocarbon containing 1 or 2 carbon atoms, said proteinaceous material being selected from the group consisting of wheat, rye, barley, triticale, rice, peas, beans, soya beans, sesame seeds, peanuts, sunflower seed, whey powder, corn, rapeseed, sorghum, flax and buckwheat, comprising the steps of:

(a) subjecting the admixture to the influence of a high voltage electric field, said admixture being in the form of a slurry and said electric field being formed between an anode and a cathode, and thereby depositing at least part of the comminuted fraction of proteinaceous material on at least the anode, and

(b) separating the part so deposited from said admixture.

4,208,261

CONTINUOUS METHOD FOR CATHODIC ELECTRODEPOSITION

Nobuaki Todoroki, Warabi, and Junichi Yasukawa, Chigasaki, both of Japan, assignors to Shinto Paint Co., Ltd., Amagasaki, Japan

Filed Jun. 2, 1978, Ser. No. 911,950

Int. Cl.[2] **C25D** *13/06, 13/22*

U.S. Cl. 204—181 C **4 Claims**

1. In a method for coating an electrically conductive article with a resinous material by electrodeposition comprising immersing said article as the cathode in an aqueous bath containing, as essential components, (1) a water thinnable cationic binder resin which is a nitrogen atom-containing resin neutralized partially with an acid compound and (2) at least one non-ionic resin in the form of powder which is solid at the room temperature but can melt when heated to form a film, and applying a voltage between said cathode and an anticorrosive electrical conductor as an anode through said bath, so that said cationic binder resin and non-ionic resin powder are deposited on the surface of the article, the amount of the non-ionic resin being 100–5000 parts by weight per 100 parts of the binder resin, and the solid content in the aqueous bath being 10–20% by weight; the improvement wherein the electrodeposition is conducted continuously and a replenishing supply liquid is added to the aqueous bath during the electrodeposition in order to maintain the composition of the bath as constant as possible, said replenishing supply liquid being such composition that (A) the proportion of water is made smaller than in the initial aqueous bath, (B) the proportion of the nitrogen atom-containing basic resin relative to the acid compound is made larger than that used at the time of the initial partial neutralization and (C) there is also contained the non-ionic resin powder; said replenishing liquid being added to the bath when the neutralization degree of the cationic binder resin in the bath has been raised so that said neutralization degree is increased at least about 10% beyond the neutralization degree of said cationic binder resin before voltage was applied between said cathode and said anticorrosive electrical conductor anode.

4,208,262

ELECTRODEPOSITION COATING

Akira Kubo, Sakura; Nobuaki Todoroki, Warabi; Yasuhiko Teshima, Yachiyo; Nobuo Kuranami, Narashino; Nobukazu Tsutsui, Kawanishi, and Akio Kasai, Sayama, all of Japan, assignors to Shinto Paint Co., Ltd., Amagasaki and Honda Motor Co. Ltd., Tokyo, both of, Japan

Filed May 10, 1979, Ser. No. 37,853

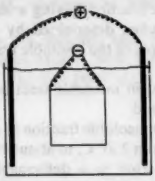
Claims priority, application Japan, May 11, 1978, 53-56009; May 11, 1978, 53-56010

Int. Cl.[2] **C25D** *13/06, 13/22*

U.S. Cl. 204—181 T **2 Claims**

1. In a process for coating an article comprising subjecting the article to a powder electrodeposition in a bath containing a water-thinnable cationic synthetic resin and a synthetic resin in the form of fine powder, subsequently, without hardening the formed coating, to an additional electrodeposition in a bath containing an ionic synthetic resin, and baking thus formed coatings to cause to crosslink and harden themselves, an im-

provement which is characterized by that a hot water of more than 50° C. is sprayed onto the coated film after finishing the



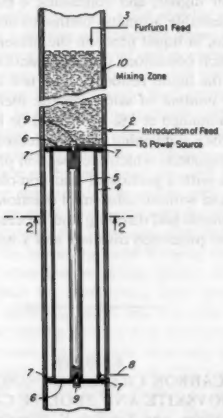
first half powder electrodeposition, but before conducting the second half electrodeposition.

4,208,263

SOLVENT EXTRACTION PRODUCTION OF LUBE OIL FRACTIONS

Costandi A. Audeh, Princeton, N.J., and Tsoung Y. Yan, Philadelphia, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 15, 1979, Ser. No. 12,278
Int. Cl.² B03C *5/00*
U.S. Cl. 204—188 **4 Claims**



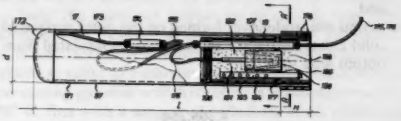
1. An improved method of producing lubricating oils by solvent extraction which comprises contacting a lube oil-containing hydrocarbon charge under conditions of solvent selectivity to permit the recovery of a raffinate phase which upon dewaxing will provide a lube oil product, the improvement whereby the extract phase, at a temperature of from about 100° to about 300° F., is passed through an electrical cell at from about 0.7 to about 2.4 cm. per minute while being subjected to a voltage gradient of from about 2 to about 200 volts at from about 0.4 to about 50 milliamps, resulting in improved yields of raffinate and reduced yields of extract.

4,208,264

SENSOR FOR DETERMINATION OF THE POLARIZATION POTENTIAL AND/OR THE INTERFERENCE OF METAL STRUCTURES BURIED IN AN ELECTROLYTE IN A CURRENT FIELD

Josef Polak, Prague, and Josef Mrazek, Roudnice, both of Czechoslovakia, assignors to Chemoprojekt, Prague, Czechoslovakia

Filed Oct. 6, 1977, Ser. No. 840,013
Claims priority, application Czechoslovakia, Oct. 21, 1976, 6084-76; Dec. 30, 1976, 8850-76
Int. Cl.² G01N *27/46*
U.S. Cl. 204—195 C **8 Claims**



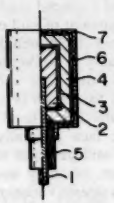
1. A system for determination of the electrolytic corrosion characteristics of a metal structure having a known surface area buried in an electrolyte in a current field, said system including a sensor comprising (i) at least one auxiliary metal electrode made of the same material as the measured metal structure and (ii) a permanent reference electrode, the auxiliary metal electrode forming a hollow cylindrical cavity, one end thereof having a closed metal bottom, said auxiliary electrode having a bare metal measuring surface area S_1, satisfying the relation $2.0\ m^2 \geqq S_1 \geqq 0.1 cm^2$, the other end thereof being fitted with an insulating shield, said permanent reference electrode being completely disposed within said hollow cavity.

4,208,265

OXYGEN SENSOR ELEMENT AND PROCESS OF MANUFACTURE

Ryuzo Hori; Kiyoshi Uchida; Yasuhiro Otsuka; Shinichi Matsumoto, and Hiroshi Wakisaka, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 28, 1978, Ser. No. 900,858
Claims priority, application Japan, Nov. 11, 1977, 52-135330
Int. Cl.² G01N *27/58*
U.S. Cl. 204—195 S **19 Claims**



1. Process for manufacturing an oxygen sensor element comprising the steps of:

(a) forming a sinterable mass of an oxygen reference material around an output lead wire, the sinterable mass being of a material selected from the group consisting of a metal, or a mixture of a metal and its oxide, said sinterable mass containing an anti-over sintering agent;

(b) sintering said mass of reference material to form a porous sintered mass of oxygen partial pressure generating material in the form of a solid pole with the lead wire embedded in the material;

(c) then coating a first metal layer onto the outside surface of the solid pole so that the first metal layer electrically contacts the lead wire;

(d) then coating the entire external surface of the first metal layer coated solid pole with a solid electrolyte; and

(e) then coating a second metal electrode layer on the outside surface of the solid electrolyte layer.

18. An oxygen sensor element comprising:

an output lead wire,

a porous sintered mass of an oxygen partial pressure generating material in the form of a solid pole formed onto one end of said output lead wire,

a first metal electrode layer formed on the outer surface of said solid pole so that the first metal electrode layer electrically contacts said output lead wire,

a solid electrolyte layer formed wholly around the outer surface of said first metal electrode layer and solid pole, and

a second electrode layer formed on the outer surface of said solid electrolyte layer and electrically insulated from said output lead wire.

4,208,266

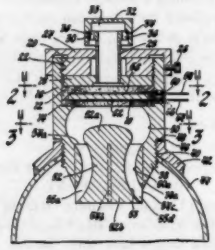
EXHAUST GAS OXYGEN SENSOR

John T. Auman, Washington; Donald F. Mennucci, Mt. Clemens, and James B. Ricketts, Jr., St. Clair Shores, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 27, 1978, Ser. No. 955,158

Int. Cl.[2] G01N *27/58*

U.S. Cl. 204—195 S **3 Claims**



1. In a galvanic exhaust gas sensor having a circular solid electrolyte disc with a flat face having a porous electrode thereon for exposure to an exhaust gas stream of varying velocities and pressures, a generally cylindrical coaxial housing surrounding said disc and a coaxial shield protecting said electrode from direct impingement of said exhaust gas stream, the improvement wherein said shield includes a chamber contiguous said disc face, a plurality of convergent-divergent passages generally normal to said disc face and generally uniformly arrayed about the shield axis, each of said passages having a substantially identical critical flow level, ends on said passages opposite from said disc face generally disposed outwardly from said axis, ends on said passages adjacent said disc face intersecting said chamber, whereby said disc is substantially isolated from exhaust gas stream variations above a preselected level and said sensor is substantially independent of sensor radial orientation in said exhaust gas stream.

4,208,267

FORMING OPTICALLY ANISOTROPIC PITCHES

Russell J. Diefendorf, Clifton Park, N.Y., and Dennis M. Riggs, Milford, Mass., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 813,931, Jul. 8, 1977, abandoned. This application May 5, 1978, Ser. No. 903,172

Int. Cl.[2] C10C *3/08*

U.S. Cl. 208—22 **21 Claims**

1. A process for producing an optically anisotropic, deformable pitch comprising:

treating a carbonaceous isotropic pitch with an organic solvent system, said organic solvent system having a solubility parameter at 25° C. of between about 8.0 and about 9.5, said treating being at a temperature and with an amount of organic solvent system sufficient to provide a solvent insoluble fraction having a sintering point below about 350° C. when determined by differential thermal analysis of a sample of the insoluble fraction in the absence of oxygen;

separating said solvent insoluble fraction from said organic solvent system; and

heating said solvent insoluble fraction to a temperature in the range of from about 230° C. to about 400° C. whereby said fraction is converted to a deformable pitch containing greater than 75% of an optically anisotropic phase and which phase when extracted with quinoline at 75° C. contains less than about 25 wt. % of substances insoluble in said quinoline.

4,208,268

METHOD OF PROCESSING THERMAL CRACKED BY-PRODUCT OIL

Atsushi Sato; Isoo Shimizu, both of Yokohama, and Eiichi Matsuzaka, Tokyo, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan

Filed Mar. 27, 1978, Ser. No. 890,302

Claims priority, application Japan, Mar. 29, 1977, 52-33942

Int. Cl.[2] C10G *17/00, 29/00*

U.S. Cl. 208—46 **16 Claims**

1. Method of improving thermal cracked by-product oil to remove undesirable unsaturates and recover an improved processed distillate which comprises reacting a distillate from a thermal cracked by-product oil principally containing components of a boiling range between 75° C. and 198° C., said distillate being selected from one of the distillates from the thermal cracking of petroleum hydrocarbons at a temperature of 700° C. or higher, and containing a ratio of 5–100 molar percent undesirable aromatic olefins to non-olefinic aromatic hydrocarbons, in liquid phase in the presence of an acid catalyst under such conditions that the reaction temperature is 0° C.–200° C., the liquid residence time is 0.1 hour–5 hours and wherein the content of said aromatic olefins in the reaction system is maintained at 5% by weight or less, to yield a processed distillate containing non-condensed di- and tricyclic aromatic compounds which are reaction products of said aromatic olefins with a portion of said non-olefinic aromatic hydrocarbons and without substantial reaction with other unsaturated components and distilling said processed distillate to get said improved processed distillate and a heavy reaction product oil.

4,208,269

HYDROCARBON CRACKING USING COMBINED PEROVSKITE AND ZEOLITE CATALYST

Elroy M. Gladrow, and Kenneth S. Wheelock, both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 850,038, Nov. 9, 1977. This application Mar. 19, 1979, Ser. No. 22,114

Int. Cl.[2] C10G *11/04;* B01J *8/24*

U.S. Cl. 208—120 **20 Claims**

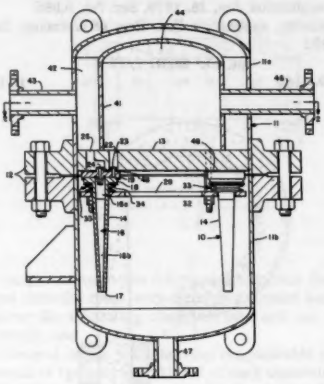
1. A process for the conversion of a hydrocarbonaceous oil to lower boiling hydrocarbon products, which comprises: contacting said oil at catalytic cracking conditions with a catalyst comprising (1) a crystalline aluminosilicate zeolite, (2) an inorganic oxide gel, and (3) an effective amount of a perovskite having at least one transition metal cation.

4,208,270

HYDROCYCLONE ASSEMBLY

Donald F. Grieve, La Honda, and Robert E. Hochscheid, Palo Alto, both of Calif., assignors to Krebs Engineers, Menlo Park, Calif.

Continuation of Ser. No. 890,406, Mar. 27, 1978, abandoned. This application May 7, 1979, Ser. No. 36,386
Int. Cl.[2] B04C 5/20
U.S. Cl. 209—211 6 Claims



1. A hydrocyclone assembly suitable for high temperature applications comprising, when disposed in vertical position, an upright hydrocyclone body of ceramic material having an elongated separating chamber that is circular in section, the upper end of the body having an integral annular flange, the lower side of the flange presenting a flat annular surface area, the chamber having a portion adjacent the upper flanged end of the body for receiving feed material and an extended conical portion communicating at its lower apex end with an underflow discharge opening, an annular inlet head having the lower surface of the same in abutting engagement with the upper surface of the annular flange, a horizontal mounting plate having the lower surface of the same in abutting engagement with the upper surface of the inlet head, the inlet head having an overflow passage communicating axially with the interior of the chamber and an involute passage with its outlet communicating tangentially with the separating chamber, means on the upper side of the mounting plate forming separate fluid feed receiving and overflow receiving spaces, the mounting plate having one duct for establishing fluid communication between the feed receiving space and the inlet end of the involute passage and having another duct for establishing fluid communication between the overflow receiving space and the overflow passage, sealing means interposed between the upper surface of the head and the lower surface of the mounting plate, and means for yieldably clamping the flanged end of the body and the inlet head together and against the plate, said means including a horizontal thrust abutment member disposed below said mounting plate and surrounding that portion of the body below and adjacent said flange, and partially compressed annular spring means of the distorted washer type interposed between the upper surface of the abutment member and the lower flat annular surface area of the flange, said last named means serving to apply clamping force that is evenly distributed over said annular flange and forming the yieldable means for supporting the hydrocyclone body and for clamping the flanged end of the body and the inlet head together and against the mounting plate.

4,208,271

PROCESS FOR THE SELECTIVE HYDROGENATION OF GASOLINES COMPRISING BOTH GUM-GENERATING COMPOUNDS AND UNDESIRABLE SULFUR COMPOUNDS

Jean Cosyns, Maule, and Michel Derrien, Rueil Malmaison, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Nov. 29, 1978, Ser. No. 964,393
Claims priority, application France, Nov. 29, 1977, 77 36221
Int. Cl.[2] C10G 23/04
U.S. Cl. 208—255 12 Claims

1. A process for the selective hydrogenation of gasoline contaning (a) mono-olefins, (b) gum-generating compounds, and at least 200 parts per million by weight of total sulfur, including at least 10 parts per million by weight calculated as sulfur of mercaptans or at least 2 parts per million by weight calculated as sulfur of hydrogen sulfide; said process comprising contacting gasoline with hydrogen at a temperature of 30° to 250° C. first with a supported palladium metal catalyst and then with a supported nickel metal catalyst; said contacting being conducted under such conditions that the gum-generating compounds are substantially eliminated and a sweetened gasoline is obtained without excessive hydrogenation of the monoolefins.

4,208,272

SEPARATION OF LIMESTONE FROM LIMESTONE ORE

Brij M. Moudgil, Ontario, Calif., assignor to Occidental Research Corporation, La Verne, Calif.

Filed Apr. 19, 1978, Ser. No. 897,740
Int. Cl.[2] B07C 5/02, 5/34
U.S. Cl. 209—3.3 25 Claims

1. A method for the separation of higher-grade limestone from lower-grade limestone and gangue present in particulate limestone ore which comprises: conditioning particulate limestone ore by contacting it with at least one coupling agent selected from saturated and unsaturated carboxylic acids containing from about 4 to about 22 carbon atoms; combining with said coupling agent at least one fluorescent dye before or after conditioning the particulate limestone ore with the coupling agent, said coupling agent selectively coating calcium carbonate in the particulate limestone ore to the substantial exclusion of coating gangue; exposing the conditioned particulate limestone ore to electromagnetic radiation to excite and induce fluorescence of the fluorescent dye to a degree sufficient to distinguish the coated higher-grade limestone particles from the lesser coated lower-grade limestone and the substantially non-coated gangue particles and separating the fluorescing higher-grade limestone particles from the lesser fluorescing lower-grade limestone and substantially nonfluorescing gangue particles.

4,208,273

SEPARATION OF COAL FROM WASTE MATERIAL

Brij M. Moudgil, Ontario, and David F. Messenger, Pomona, both of Calif., assignors to Occidental Research Corporation, La Verne, Calif.

Filed Apr. 19, 1978, Ser. No. 897,779
Int. Cl.[2] B07C 5/02
U.S. Cl. 209—3.3 15 Claims

1. A process for the separation of coal from a run of mine (ROM) coal containing particles of carbonaceous coal and refuse which comprises conditioning the ROM coal with a coupling agent capable of selectively coating carbonaceous coal in the particulate ROM coal to the substantial exclusion of coating refuse, which coupling agent comprises at least one alcohol containing from about 6 to about 22 carbon atoms and which coupling agent is combined with a fluorescent dye in a quantity sufficient to make the coated particles of carbonaceous coal fluoresce upon excitation to a degree sufficient to

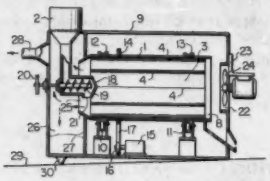
distinguish the coated carbonaceous coal particles from the substantially non-coated refuse, exciting the fluorescent dye coupled to the carbonaceous coal particles to induce fluorescence; and separating fluorescing, coated carbonaceous coal particles from substantially non-fluorescing, non-coated refuse particles.

4,208,274

ROTARY CYLINDER TYPE GRAIN SEPARATOR

Toshihiko Satake, Higashihiroshima; Hiromichi Yanagihara, Hongomachi, and Takashi Horie, Higashihiroshima, all of Japan, assignors to Satake Engineering Co., Ltd., Tokyo, Japan

Filed Feb. 13, 1978, Ser. No. 877,086
Claims priority, application Japan, Feb. 21, 1977, 52-18396
Int. Cl.² B07C 9/00
U.S. Cl. 209—44.2 **1 Claim**



1. A rotary cylinder type separator comprising a housing, a slightly tiltable horizontally extending rotary cylinder installed within and surrounded by the housing, the cylinder having first and second ends and a plurality of combs secured to the inside thereof in parallel relation to each other and substantially axially of the cylinder, means for rotating said cylinder, feeder means for introducing a mixture of grainy material and impurities into the cylinder at the first end of the cylinder, the feeder means being located in the housing at the first end of the cylinder and comprising a hopper and a screw conveyor connected to the hopper, an outlet formed in the housing at the second end of the cylinder for discharging from the cylinder and housing substantially only the grainy material, means arranged in the housing for discharging from the cylinder the impurities larger in size than the grainy material that have been scooped by the combs to a high level and have fallen within the cylinder, the impurity discharging means including fan means located at the second end of the cylinder for blowing air thereinto and exhaust means formed in the housing at the first end of the cylinder for exhausting air from the cylinder, whereby the impurities are discharged from the first end of the cylinder, and means formed within the housing for collecting the discharged impurities, the collecting means being a chamber formed by a partition, and the chamber being in air flow communication with the exhaust means.

4,208,275

FROTH FLOTATION USING LANOLIN MODIFIER

John M. Gomes; Daniel A. O'Keefe, both of Reno, and Richard M. McAlexander, Sparks, all of Nev., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jan. 24, 1979, Ser. No. 6,137
Int. Cl.² B03D 1/06
U.S. Cl. 209—167 **3 Claims**

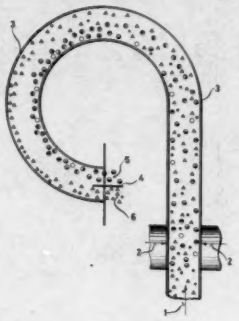
1. In a method of concentrating scheelite by froth flotation in which particles of ore are suspended in water in the presence of a collector chemical which renders desired scheelite particles air-avid and water-repellent, in which the suspended particles are subjected to aeration and agitation in a vessel whereby a layer of froth forms at the top of the vessel, the concentration of the desired scheelite ore present in the froth being higher than that remaining in the water, the improvement wherein the concentration of the scheelite in the froth is increased by adding lanolin to the water in which the ore particles are suspended.

4,208,276

FLOTATION PLANT

Albert Bahr, Clausthal-Zellerfeld, Fed. Rep. of Germany, assignor to Bergwerksverband GmbH, Essen-Kray, Fed. Rep. of Germany

Continuation of Ser. No. 814,297, Jul. 11, 1977, abandoned. This application Jan. 26, 1979, Ser. No. 6,896
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1976, 2631392
Int. Cl.² B03D 1/14
U.S. Cl. 209—168 **16 Claims**



1. A flotation plant comprising:

tubular flow means having a first inlet and an outlet, and adapted to receive a liquid stream containing a plurality of first solid particles to be floated and a plurality of second solid particles not to be floated, said flow means further having a uniform cross section configuration and at least one curved tubular separating stretch interposed said first inlet and said outlet;

at least one second inlet mounted to said flow means downstream of said first inlet, said at least one second inlet being adapted to receive gases upstream of said separating stretch, wherein bubble/particle complexes are formed, which complexes comprise bubbles of said gases and said first solid particles; and

a septum mounted integral said outlet such that said first solid particles associate with bubbles of said gases and form complexes in said stream, said complexes form a boundary layer to be separated on one side of said septum, and said stream containing said second particles form a boundary layer to be separated on the other side of said septum.

4,208,277

ROTARY RECIPROCATING MAGNETIC SEPARATOR WITH UPWARD FEED

Charles H. Lofthouse; David G. Bell, and Leyland R. Phillips, Cornwall, all of England, assignors to English Clays Lovering Pochin & Company Limited, St. Austell, Cornwall, England

Filed Dec. 12, 1977, Ser. No. 859,446
Claims priority, application United Kingdom, Dec. 15, 1976, 52416/76
Int. Cl.² B03C 1/14
U.S. Cl. 209—223 A **12 Claims**

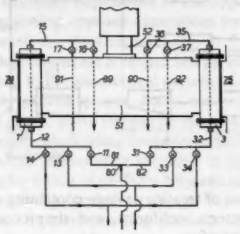
1. A magnetic separator comprising:

(a) magnet means for establishing a magnetic field in at least one first zone;

(b) a rotor provided with a plurality of separating chambers each supported at a distance from the axis of rotation of

the rotor, each separating chamber containing a fluid permeable and magnetisable packing material and being provided with an inlet for feed suspension in a bottom region thereof and an outlet in a top region thereof;

(c) supply means including at least one flexible pipe coupled to the inlets of the separating chambers, which supply means is provided for supplying feed suspension containing magnetisable particles to the inlet of each separating chamber when that separating chamber is within (one of) the first zone(s);



(d) reciprocating means for turning the rotor first one way and then the other way through a limited angle so as to move the separating chambers into and out of the first zone(s); and

(e) removal means for removing magnetisable particles retained in the packing material of each separating chamber after that separating chamber has been moved out of (one of) the first zone(s) into a second zone.

4,208,278

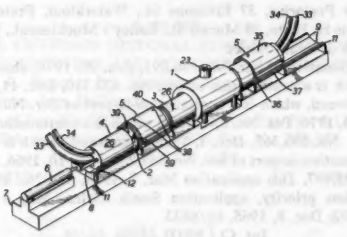
SEPARATING CHAMBER FOR MAGNETIC SEPARATOR

Zdenek J. J. Stekly, Hampshire Ct., Wayland, Mass. 01778

Filed Feb. 27, 1978, Ser. No. 881,807

Int. Cl.[2] B03C *1/10*

U.S. Cl. 209—223 R **8 Claims**



1. A magnetic separation apparatus comprising:

(a) a magnet for establishing a magnetic field in a predetermined zone;

(b) a separating chamber having: (i) a rigid elongate canister having an inlet and an outlet for a fluid which carries magnetisable particles sought to be separated by said apparatus; (ii) two fluid-permeable partitions disposed within the canister so as to divide the space within the canister into several compartments, each of which extends substantially the full length of the canister; (iii) a fluid-permeable matrix of magnetisable packing material disposed within the compartment between the two partitions; and (iv) fluid-impermeable plates disposed within the compartment between the two partitions transverse to the axis of the canister and spaced apart so as to divide this compartment into a plurality of subcompartments; and

(c) means for moving the separating chamber axially into and out of the predetermined zone, said plates being transverse to the direction in which said packing material is displaced into and out of said predetermined zone during said axial movement of said separating chamber, whereby said plates act to limit permanent deformation of said magnetisable packing material as a result of magnetic forces generated by said magnetic field acting on the magnetisable material.

4,208,279

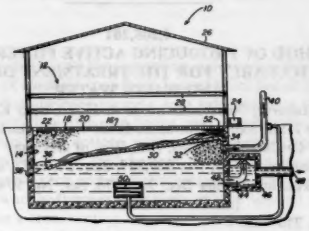
METHOD AND APPARATUS FOR PROCESSING ANIMAL WASTE

Frederick T. Varani, Boulder, Colo., assignor to Bio-Gas of Colorado, Inc., Arvada, Colo.

Filed May 7, 1979, Ser. No. 36,580

Int. Cl.[2] C02C *1/16*

U.S. Cl. 210—12 **8 Claims**



5. The method of treating animal waste materials deposited in a receptacle by animals standing on a grid-like floor covering the latter which comprises the steps of: covering all but a narrow entryway into said tank with a ramp sloping down toward said entryway, maintaining the depth of waste materials within said receptacle relative to the lower end of said ramp at a level effective to seal the portion of said materials located underneath the latter from the atmosphere, flushing the waste materials deposited on the ramp down into the receptacle through said entryway, seeding the waste materials contained within the receptacle with bacteria capable of breaking the bio-degradable constituents thereof down into bio-gas and solid residues under controlled temperature conditions, heating the waste materials within the receptacle to the temperature conducive to promote anaerobic digestion of said bio-degradable constituents, tapping off the bio-gas from underneath the ramp, and removing the solid residues from the receptacle at a point remote from the entryway.

4,208,280

EXTRACTION METHOD

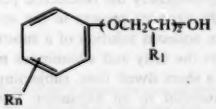
Carter G. Naylor, Austin, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Filed Feb. 13, 1978, Ser. No. 876,971

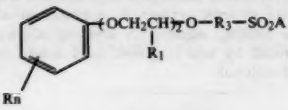
Int. Cl.[2] B01D *11/04*

U.S. Cl. 210—22 R **5 Claims**

1. The method of resolving a mixture of a nonionic surfactant and an anionic surfactant existing in an aqueous media, said nonionic surfactant having a structural formula as follows:



where R is a C_1–C_{22} alkyl group, n is an integer of 1–3, R is H or CH_3, and z is an integer of 1–40, said anionic surfactant having a structural formula as follows:



where R, R_1, n and z have a significance as above, R_3 is ethylene or propylene and A is a cation; which comprises the step of treating said aqueous mixture with at least an effective amount of cyclohexanone sufficient to dissolve said nonionic surfactant in said cyclohexanone and separating out said solution of nonionic surfactant in cyclohexanone from a remaining solution of anionic surfactant in water.

4,208,281

METHOD OF PRODUCING ACTIVE FILTERS MORE PARTICULARLY FOR THE TREATMENT OF WATER AND WASTE WATER

Klaus Haberer, Nussbaumstrasse 4; Han-Ulrich Klen, Verdistrasse 2, and Sabine Normann, Ernst-von-Harnack-Strasse 16, all of D-6200 Wiesbaden, Fed. Rep. of Germany

Continuation of Ser. No. 809,857, Jun. 24, 1977, abandoned. This application Dec. 29, 1978, Ser. No. 974,441

Int. Cl.[2] B01D *15/00, 37/02*

U.S. Cl. 210—36 **6 Claims**

1. A method for purifying liquids containing dissolved impurities comprising

providing a filter bed of buoyant plastic balls having a surface to which a powdered active material capable of adsorbing dissolved impurities will adhere when subjected to liquid flow rates no greater than a first value and from which the powdered active material will be removed when subjected to liquid flow rates having a second value greater than the first value,

passing a liquid containing the powdered active material through the filter bed in the upward direction at a flow rate having the first value to cause the powdered active material to be distributed on and adhere to the surfaces of the plastic balls, and

passing the liquid to be purified through the filter bed in the upward direction at a flow rate lower than the first value to cause impurities to be adsorbed by the powdered active material without removing the powdered active material from the surfaces of the plastic balls.

4,208,282

PROCESS FOR THE PURIFICATION OF SEWAGE WHILE RECAPTURING THE FATTY AND ALBUMINOUS MATTER IN REUSABLE FORM

Dieter J. Becker, 30, Hohenloher Ring, D 2081 Bönningstedt, Fed. Rep. of Germany

Filed Oct. 20, 1978, Ser. No. 952,951

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1978, 2808703

Int. Cl.[2] C02C *1/40*

U.S. Cl. 210—44 **10 Claims**

1. A process for the purification of sewage containing fatty and albuminous matter which comprises adjusting the pH value of the sewage to approximately the isoelectric point of the main components of the proteins present in the sewage; mixing said sewage with an aqueous solution of a substituted anionic starch to precipitate the fatty and albuminous matter by flocculation; following a short dwell time, subjecting said sewage and flocculated material to an expansion flotation under a dispersion pressure of 4.5–6 bar; separating the flotation sludge thus obtained from clarified effluent; sterilizing said flotation sludge by treatment with ultraviolet radiation; and passing the clarified effluent to waste.

4,208,283

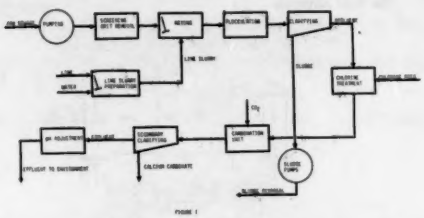
PROCESS FOR TREATMENT OF WASTE WATERS

Raymond J. Brouzes, Montreal, Canada, assignor to Domtar Inc., Montreal, Canada

Continuation-in-part of Ser. No. 741,957, Nov. 15, 1976, abandoned. This application Jan. 23, 1978, Ser. No. 871,201

Int. Cl.[2] C02B *1/20, 1/36;* **C02C** *1/40*

U.S. Cl. 210—50 **13 Claims**



1. A process of treating sewage containing micro-organisms including bacteria, coliforms, and streptococci which comprises the steps of:

(a) mixing said sewage with a material containing a compound of the group consisting of calcium oxide and calcium hydroxide thereby to form a mixture having a pH of at least 11.0, said mixture containing solids in suspension in a liquid,

(b) treating said mixture to separate at least a portion of said solids from said liquid,

(c) treating said liquid with chlorine at said pH of at least 11.0 for at least 1 minute to obtain a total residual chlorine content (TRC) in said liquid of at least 0.1 parts per million and to substantially destroy said micro-organisms, and

(d) adjusting the pH of said liquid to an environmentally acceptable level.

4,208,284

APPARATUS FOR DISTRIBUTION SEPARATION PROCESSES

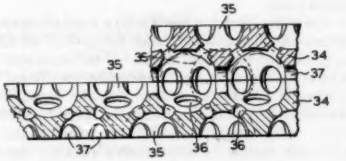
Victor Pretorius, 37 Eridanus St., Waterkloof, Pretoria, and Hans H. Hahn, 38 Marais St., Bailey's Muckleneuk, Pretoria, both of South Africa

Continuation of Ser. No. 700,891, Jun. 29, 1976, abandoned, which is a continuation of Ser. No. 423,710, Dec. 11, 1973, abandoned, which is a continuation-in-part of Ser. No. 86,621, Nov. 3, 1970, Pat. No. 3,796,657, which is a continuation of Ser. No. 598,365, Dec. 1, 1966, abandoned, which is a continuation-in-part of Ser. No. 548,900, May 10, 1966, Pat. No. 3,493,497. This application Mar. 8, 1978, Ser. No. 884,511

Claims priority, application South Africa, May 11, 1965, 65/2502; Dec. 8, 1965, 65/6633

Int. Cl.[2] B01D *15/08, 53/14*

U.S. Cl. 210—65 **18 Claims**



1. A packing which comprises a porous structure having essentially the texture of an open foam composed essentially of interleading pores and skeletal surfaces outlining the pores, the porous structure in cross-section extending essentially continuously, uniformly and at least predominantly coherently across its entire three dimensions;

wherein said porous structure is assembled by stacking a plurality of porous integral panels in which said texture repeatedly recurs in the two larger dimensions of each panel;

wherein the faces of each panel are formed essentially by a plurality of depressions, adjoining depressions of opposite panel faces being interleading when said panels are stacked, and adjoining depressions of the same panel face also being interleading when said panels are stacked; the shape of each depression being concave facing inward toward the adjoining depressions of the opposite panel;

wherein said adjoining opposed depressions form said pores when the panels are stacked; and

wherein said depressions are arranged in a pattern essentially corresponding to the geometrical pattern of the peripheries of densely packed spheres;

whereby each of said pores formed by the opposed concave depressions is in interleading communication with each of the pores which immediately surround it; said communication being by means of passages between said pores; and said passages being located on the surface of each pore essentially at the corresponding points at which the surrounding spheres would contact each central sphere in a densely packed sphere geomtry.

18. A distribution separation process of the type in which a fluid phase flows relative to a second phase through a space having defined outlines and a separation takes place by material distribution between the phases which are intimately contacted with one another along the outside and both are confined to the outside of the solid surfaces of three-dimensionally interleading pores of a porous material composed of said pores and solid parts between the pores, the fluid phase being guided through the pores along a flow pattern directed by said solid surfaces, wherein said porous material is the packing of claim **1**.

4,208,285

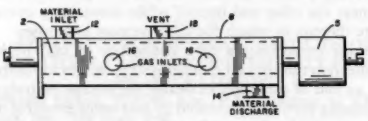
DRILL CUTTINGS DISPOSAL SYSTEM WITH GOOD ENVIRONMENTAL AND ECOLOGICAL PROPERTIES

Thomas E. Sample, Jr., Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 704,267, Jul. 12, 1976, Pat. No. 4,139,462. This application Oct. 20, 1978, Ser. No. 953,152

Int. Cl.[2] **F27B** *9/24*

U.S. Cl. 210—180 **8 Claims**



1. Apparatus for the thermal treatment of oil well drill cuttings which transforms them from a wet oily condition to a clean substantially oil-free condition, comprising means for separating the cuttings from a drilling fluid, means for feeding said separated cuttings to a vented heating chamber having a non-oxidative environment, means for moving said separated cuttings through said chamber, means for heating said cuttings to a temperature of 500° to 700° F. to vaporize the volatile materials therein, and convert the hydrocarbon residue on and in the cuttings to a form sufficiently pollutionfree as to be fit for direct disposal in water or on land, means for collecting said heated cuttings and, means for collecting volatile materials for discharge to the atmosphere

4,208,286

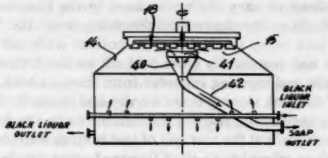
SULPHATE SOAP SKIMMING APPARATUS

Pekka K. Kauppi, P.O. Box 2137, Vancouver, B. C., Canada (V6B 3T8)

Filed Nov. 3, 1977, Ser. No. 848,039

Int. Cl.[2] **B01D** *23/00, 21/02*

U.S. Cl. 210—187 **4 Claims**



1. A separator vessel for separating and removing a substantial amount of sulphate soap from heated black liquor obtained from a sulphate pulping process, said sulphate soap having a specific gravity less than said liquor, said vessel comprising an enclosure having a bottom section, a tapering conical top section directly above said bottom section and tapering inwardly towards a top end soap discharge area, said top section tapering inwardly from said bottom section toward said top end to define a cross-section area decreasingly smaller than the cross-section area of said bottom section to cause an increase in velocity of said soap as it rises in said top section toward said discharge area, conduit means in said enclosure to release said liquid in said bottom section at a low velocity, at least two rotating scrapers secured at said top end soap discharge area of said conical section and rotatable therein for continuously skimming and discharging said sulphate soap in a collector vessel as said soap rises to a predetermined level in said top end area, said collector vessel being secured centrally of said top end area and having an open top lying at said predetermined level whereby said two or more scrapers will discharge soap therein as it rises to said predetermined level, a pipe to transport said soap from said collector vessel, said pipe extending through said enclosure and in contact with said heated liquid whereby said pipe will remain hot to improve the convection of soap discharged into said collector vessel, and an outlet spaced below said conduit means to remove liquor from the bottom of said enclosure as said substantial amount of sulphate soap rises toward said top end area.

4,208,287

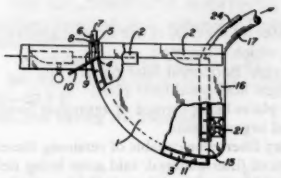
OIL SPILL SKIMMER

Eugene F. Brieck, 1802 Patricia La., Apt. 2E, North Versailles, Pa. 15137

Filed Jun. 12, 1979, Ser. No. 47,877

Int. Cl.[2] **E02B** *15/04*

U.S. Cl. 210—242 S **2 Claims**



1. An oil spill skimmer comprising a floating vessel provided with an oil-receiving tank having a front and a back connected by opposite sides, the top of the tank being rectangular, the front of the tank having a horizontal sill near the top of the tank, an inclined apron extending forward and downwardly from said sill, the back and sides of the tank extending above

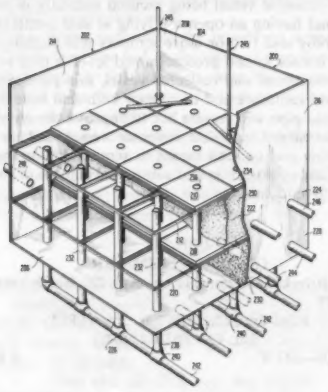
the level of the sill, the tank having double walls forming a chamber therebetween for water ballast to submerge said vessel far enough for said sill to be at oil-skimming level during skimming, front and rear pontoons connected to each side of the tank near its top to support and stabilize the tank, the lower part of the outer wall of said chamber being provided with openings for passage of water into and out of the chamber, means for pumping air into the top of said chamber and releasing air therefrom to vary the water level in the chamber to maintain said sill at the desired oil-skimming level, the back walls of the tank being vertical and the bottom walls curving downwardly and rearwardly from said sill to the bottom of said back walls and tapering in width from front to back, the side walls of the tank sloping downwardly and inwardly from the top of the tank to the sides of the bottom walls, the lower part of the back walls at the rear end of said bottom walls being provided with an oil outlet, a pair of floating booms attached at one end to opposite sides of the front of said vessel and diverging forward therefrom, the front ends of the booms being adapted to be connected to boats for pulling the booms and said vessel through the water to gather oil between the booms and direct it over said apron and sill into said tank, an outlet pipe connected to the outer end of said oil outlet and extending up the back of the tank, a hose connected to the upper end of said pipe for delivering oil therefrom to an oil and water separator, and a pump at the lower end of the pipe.

4,208,288

FILTERING APPARATUS

Forrest B. Stannard, Ft. Lauderdale, and Edward J. Highstreet, Coral Springs, both of Fla., assignors to The De Hydro Corporation, Ft. Lauderdale, Fla.

Filed Dec. 7, 1978, Ser. No. 967,202
Int. Cl.[2] B01D *23/10, 25/22*
U.S. Cl. 210—277 **5 Claims**



1. Apparatus for removal of fine organic solids from aqueous suspensions which comprises:

an upper rigid horizontal filter plate,

a lower rigid horizontal filter plate,

said filter plates being formed of aggregate fixed in a matrix of cured organic resin,

a secondary filter zone capable of retaining therein a mass of particles of filter material, said zone being defined at the top by said upper filter plate, at the bottom by said lower filter plate and on the sides by solid side walls,

a first chamber to contain liquid above said upper plate, the base of said first chamber being said upper plate,

a second chamber to contain liquid below said lower plate, the roof of said second chamber being said lower plate,

a hole extending vertically through said upper filter plate,

a vertical conduit having a horizontal cross-section substantially corresponding to the size of said hole, said conduit being positioned at its upper end in said hole,

the combination of said hole and conduit consisting essentially of the means by which (a) liquid influent is introduced during the filtering mode of said apparatus into said first chamber from a source external of said apparatus and (b) wash water is removed from said first chamber during the washing mode of said apparatus,

first and second liquid conduits for inlet and outlet of liquid to and from said secondary filter zone,

third and fourth liquid conduits for inlet and outlet of liquid to and from said second chamber, and

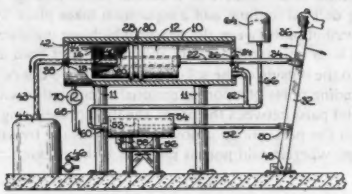
a sparger to spray wash water on the top surface of said upper filter plate.

4,208,289

REVERSE OSMOSIS APPARATUS EMPLOYING A RECIPROCATING MEMBRANE CARTRIDGE

Donald T. Bray, Escondido, Calif., assignor to Desalination Systems, Inc., Escondido, Calif.

Filed Nov. 8, 1978, Ser. No. 958,938
The portion of the term of this patent subsequent to Jan. 24, 1995, has been disclaimed.
Int. Cl.[2] B01D *13/00, 33/00;* **C02B** *1/82*
U.S. Cl. 210—321 R **4 Claims**



1. Apparatus for treating liquid by reverse osmosis comprising; a tubular pressure resistant vessel containing a semipermeable membrane cartridge comprising a membrane, a permeate transfer sheet and a spacer sheet all sprially wound around a central permeate collection tube, and providing generally longitudinal channels for passage of feed liquid therethrough, said semipermeable membrane cartridge being of cylindrical configuration and being materially shorter than said tubular pressure resistant vessel, and being of diameter to fit slidably inside said tubular pressure resistant vessel; means for introducing pressurized impure feed liquid into said tubular pressure resistant vessel near one end thereof for longitudinal passage through said semipermeable membrane cartridge; and means for releasing concentrate from said tubular pressure resistant vessel near the other end thereof while maintaining operating pressure therein; in which the improvement comprises:

a. means comprising a tube connected to said permeate collection tube of said semipermeable membrane cartridge at an end of said semipermeable membrane cartridge for releasing permeate produced by said semipermeable membrane cartridge from said tubular pressure resistant vessel;

b. means attached to an end of said semipermeable membrane cartridge for reciprocating said semipermeable cartridge within said tubular pressure resistant vessel during passage of feed liquid therethrough; and,

c. means for providing an effective cross sectional area of the end of said semipermeable membrane cartridge exposed to the pressure of said feed liquid in said tubular pressure resistant vessel substantially the same as the effective cross sectional area of the end of said semipermeable membrane cartridge exposed to the pressure of said concentrate in said tubular pressure resistant vessel;

d. whereby the forces exerted by the pressure of feed liquid on one end of said semipermeable membrane cartridge and force exerted by the pressure of concentrate on the other

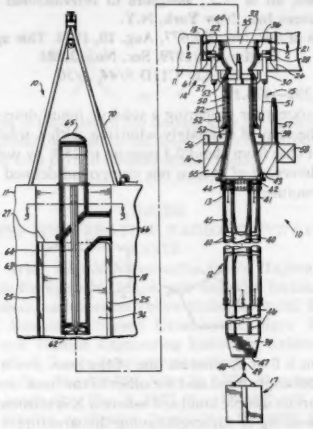
end of said semipermeable membrane cartridge are essentially balanced.

4,208,290

SELF-CLEANING INLET SCREEN TO AN OCEAN RISER PIPE

Sherman B. Wetmore, Westminster, and Abraham Person, Los Alamitos, both of Calif., assignors to Global Marine, Inc., Los Angeles, Calif.

Filed Aug. 21, 1978, Ser. No. 935,674
Int. Cl.² B01D *35/02*
U.S. Cl. 210—460 **6 Claims**



1. An inlet screen for an ocean upwelling pipe and the like adapted to be disposed substantially vertically in an ocean for flow of sea water through a downwardly facing lower inlet end of the pipe disposed above the ocean floor and upwardly in the pipe, the screen comprising a right conical frustum of flexible loose netting and the like having an upper end larger in diameter than its lower end, an upper coupling plate adapted to be connected to the lower end of the pipe and having the upper end of the frustum connected thereto, a heavy negatively buoyant closure connected across the lower end of the frustum, a weight, and a line adapted to be connected to the pipe and to pass through the closure substantially centrally thereof for supporting the weight below the closure above the ocean floor.

4,208,291

APPARATUS FOR SEPARATING SOLIDS OF RELATIVELY LOW SPECIFIC GRAVITY FROM HEAVIER LIQUIDS

Dominique Ochoa, Trujillo Alto, P.R., assignor to KFC San Juan, Inc., San Juan, P.R.

Filed May 31, 1979, Ser. No. 44,395
Int. Cl.² B01D *21/10*
U.S. Cl. 210—522 **1 Claim**

1. An apparatus for gravity separating relatively light solids from heavier liquids, which comprises;

an enclosure, open at the top;

first partition means within said enclosure for defining a first chamber therein;

a first conduit through the enclosure having a first open end outside of the enclosure and a second open end adjacent the bottom of the chamber, said conduit being a means of delivering mixtures of the heavy liquids with said solids and liquified forms of said solids, to the apparatus;

baffle means adjacent the second open end of the conduit, for directing the flow of said mixtures upward in the chamber;

second partition means within said enclosure for defining at least in part a second chamber within said enclosure;

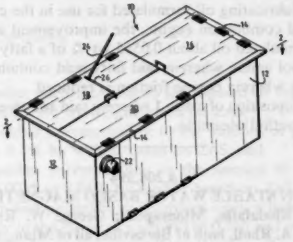
a portal in the upper part of the first partition means, opening between the top of the first chamber and the top of the second chamber;

third partition means within the enclosure which with said second partition means defines a third chamber within the enclosure and alone defines at least in part a fourth chamber;

second conduit means having a first open end in the bottom of the second chamber and a second open end in the top of the third chamber;

fourth partition means dividing the fourth chamber into first and second zones;

a portal in the bottom of the third partition means, opening between the bottom of the third chamber and the bottom of the first zone of the fourth chamber;



fifth partition means dividing the second zone into said second zone and a third zone;

a portal in the upper part of the fourth partition means opening between the first and second zones;

a portal in the bottom of the fifth partition means opening between the second and third zones;

outlet means in the upper portion of the third zone opening to the outside of the enclosure;

means of covering the open top of the enclosure;

means in the means of covering, for access to the first, second, third and fourth chambers; and

means for skimming solids from said mixtures in the second chamber, which comprise a strainer pivotally mounted at one end on a wall of the second chamber and free to pivot about its mounting so the opposite end thereof may travel in an arc from the lower end of the second chamber to above said second chamber at an angle permitting skimmed solids to fall by gravity toward the mounted end.

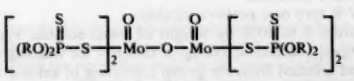
4,208,292

PHOSPHOMOLYBDATE COMPOUNDS AND THEIR USE AS LUBRICANT ADDITIVES

Robert F. Bridger, Hopewell, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 29, 1979, Ser. No. 7,057
Int. Cl.² C10M *1/48, 3/42, 5/24, 7/46*
U.S. Cl. 252—32.7 E **26 Claims**

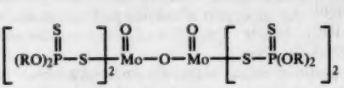
1. A compound having the formula:



wherein R may be the same or different and is a C_3–C_{30} hydrocarbyl group.

13. A method for reducing fuel consumption in an internal combustion engine by treating the moving surfaces thereof

with a composition comprising a major amount of a lubricating oil containing a fuel reducing amount of a compound of the formula:



wherein R may be the same or different and is a C_3–C_{30} hydrocarbyl group.

4,208,293

IMPROVED CRANKCASE LUBRICANT COMPOSITION

Edward F. Zaweski, Pleasant Ridge, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Nov. 13, 1978, Ser. No. 959,935

Int. Cl.² C10M *1/32*

U.S. Cl. 252—51.5 A **2 Claims**

1. In a lubricating oil formulated for use in the crankcase of an internal combustion engine, the improvement of including in said formulated oil about 0.05–5 wt % of a fatty acid amide of diethanol amine wherein said fatty acid contains 8–20 carbon atoms wherein engine friction is reduced.

2. A composition of claim **1** wherein said additive is N,N-bis-(2-hydroxyethyl)oleamide.

4,208,294

DILUTION STABLE WATER BASED MAGNETIC FLUIDS

Sanaa E. Khalafalla, Minneapolis; George W. Reimers, and Stephen A. Rholl, both of Burnsville, all of Minn., assignors to The United States of America, as represented by the Secretary of the Interior, Washington, D.C.

Filed Feb. 12, 1979, Ser. No. 11,292

Int. Cl.² C09D *11/00*; F16D *37/02*; H01F *1/28*

U.S. Cl. 252—62.52 **13 Claims**

1. A dilution stable, water-based magnetic fluid consisting essentially of water, magnetic particles dispersed therein, and at least one saturated aliphatic monocarboxylic acid having from 10 to 15 carbon atoms.

4,208,295

BLEACHING DETERGENT COMPOSITION

Fumio Sai, Chiba, and Takashi Fujino, Yokohama, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Jan. 22, 1979, Ser. No. 5,656

Claims priority, application Japan, Jan. 25, 1978, 53-6876; Jan. 25, 1978, 53-6877

Int. Cl.² C11D *3/395, 7/54*

U.S. Cl. 252—94 **13 Claims**

1. A bleaching detergent composition consisting essentially of:

(i) from 3 to 50% by weight of water-insoluble aluminosilicate having a degree of crystallization of 0 to 75% and having the formula:

$$X(M_2O)\cdot(Al_2O_3)\cdot Y(SiO_2)\cdot W(H_2O)$$

wherein M is sodium and/or potassium, and X, Y and W are mole numbers having the following values:

$0.7 \leqq X \leqq 1.2$

$1.8 \leqq Y \leqq 2.2$ and

W is zero or a positive number,

(ii) from 5 to 50% by weight of water-soluble, synthetic, organic, surface active agent effective for washing clothes and selected from the group consisting of anionic surface active agents, nonionic surface active agents, amphoteric surface active agents and mixtures thereof, (iii) from 3 to 50% by weight of sodium percarbonate, and the balance is one or a mixture of water-soluble alkali metal salt ion sequestering agent for detergents, water-soluble alkali metal salt inorganic electrolyte for detergents and water-soluble recontamination preventing agent for detergents.

4,208,296

USE OF 2,2,3,-TRIMETHYL-3-CYCLOPENTEN-1-YLALKENYL AND ALKYLIDENE CYCLOALKANOLS AND CYCLOALKANONES IN AUGMENTING OR ENHANCING THE AROMA OF DETERGENTS

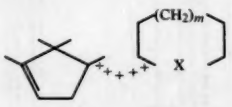
Takao Yoshida, West Long Branch; Braja D. Mookherjee, Holmdel; Venkatesh Kamath, Red Bank; John B. Hall, Rumson; William I. Taylor, Summit, and Frederick L. Schmitt, Holmdel, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 932,677, Aug. 10, 1978. This application Mar. 23, 1979, Ser. No. 23,384

Int. Cl.² C11D *9/44, 3/50*

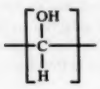
U.S. Cl. 252—174.11 **5 Claims**

1. A process for preparing a solid or liquid detergent comprising the step of intimately admixing with a solid or liquid detergent base from about 0.5 ppm up to 25% by weight based on said detergent of at least one compound defined according to the structure:



wherein m is 0 or 1; wherein one of the lines ++++ is carbon-carbon single bond and the other of the lines ++++ is a carbon-carbon double bond and wherein X is selected from the group consisting of carbonyl having the structure:

and carbinol having the structure:



4,208,297

USE OF NOVEL OXYHYDROCARBYLNORBORNANE DERIVATIVES FOR AUGMENTING OR ENHANCING THE AROMA OF DETERGENTS

Kenneth K. Light, Highlands; James M. Sanders, Eatontown; Manfred H. Vock, Locust, all of N.J.; Edward J. Shuster, Brooklyn, N.Y.; Joaquin Vinals, Red Bank, N.J.; William L. Schreiber, Jackson, N.J.; John B. Hall, Rumson, N.J.; Denis E. Hruza, Sr., Bricktown, N.J.; Venkatesh Kamath, Red Bank, N.J.; Braja D. Mookherjee, Holmdel, N.J.; Ching Y. Tseng, Middletown, N.J., and Mark A. Sprecker, Sea Bright, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

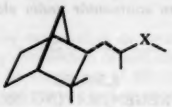
Division of Ser. No. 860,124, Dec. 13, 1977, Pat. No. 4,186,150, which is a continuation-in-part of Ser. No. 765,847, Feb. 4, 1977, Pat. No. 4,076,853. This application Apr. 24, 1979, Ser. No. 32,900

Int. Cl.² C11D *9/44, 3/50*

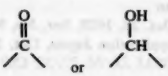
U.S. Cl. 252—174.11 **5 Claims**

1. A process for preparing a solid or liquid anionic, cationic

or nonionic detergent comprising the step of combining with a solid or liquid nonionic, anionic or cationic detergent base from 0.1% up to 1% by weight of at least one oxyhydrocarbyl-norbornane derivative having the structure:



wherein X is carbonyl or carbinyl having the structures, respectively:



and wherein at least one of the dashed lines is a carbon-carbon single bond and the other of the dashed lines is a carbon-carbon single bond or a carbon-carbon double bond.

4,208,298

PROCESS FOR TREATING RADIOACTIVE LIQUID WASTE

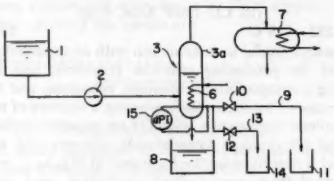
Hiromitsu Irie, Higashi-Minemachi; Fumio Tajima, Tokyo; Nobuhide Kuribayashi, Tokyo, and Kazuhisa Isozaki, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki; Nippon Genshiryoku Jigyo Kabushiki Kaisha and Toshiba Engineering Kabushiki Kaisha, both of Tokyo, all of, Japan, part interest to each

Division of Ser. No. 689,957, May 25, 1976, abandoned. This application Dec. 5, 1977, Ser. No. 857,449

Claims priority, application Japan, May 26, 1975, 50-62750

Int. Cl.[2] G21F *9/08*

U.S. Cl. 252—301.1 W **3 Claims**



1. A method of preventing radioactive contamination of the outlet line of a steam heater provided within an evaporation concentration device for heating and concentrating radioactive liquid waste supplied into said device, said method comprising the steps of:

detecting, when the evaporation concentration device is to be restarted, a differential pressure condition, between the interior of said steam heater and said radioactive liquid waste within said device, under inoperative conditions of said device;

closing a sluice valve disposed within said steam outlet line when the pressure within said steam heater is less than that of said radioactive liquid waste within said device so as to prevent any radioactive liquid waste, which may have infiltrated into said steam heater from said device, from flowing through said outlet line into the downstream end of the steam heating system;

opening a drain valve disposed within a discharge line connected to said steam heater so as to permit contaminated steam condensate within said steam heater to be completely discharged into said discharge line;

closing the drain valve after a predetermined period of time sufficient to permit the radioactive liquid waste in the steam heater to be completely drained from the steam heater;

opening said sluice valve; and

causing heating steam to flow through said steam heater and outlet line to restart the operation of the evaporation concentration device.

4,208,299

METHOD OF PREPARING ZINC SULFIDE PHOSPHOR COACTIVATED WITH COPPER AND GOLD

Mitsuhiro Oikawa, Kawasaki, and Susumu Matsuura, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Jan. 31, 1978, Ser. No. 873,957

Claims priority, application Japan, Jan. 31, 1977, 52/8748

Int. Cl.[2] C09K *11/30*

U.S. Cl. 252—301.6 S **3 Claims**

1. A method for the preparation of a zinc sulfide phosphor co-activated with copper and gold expressed by the general formula:

$$ZnS:Cu_lAu_mAl_n$$

where

l is a number corresponding to the amount of copper from 0.003 to 0.03% by weight based on ZnS,

m is a number corresponding to the amount of gold from 0.01 to 0.2% by weight based on ZnS, and

n is a number corresponding to the amount of aluminum from 0.0025 to 0.04% by weight based on ZnS,

and wherein said phosphor so produced emits a light having a chromaticity in the range of $x=0.310$ to 0.350 and $y=0.560$ to 0.600 on CIE chromaticity corrdinates, said method comprising forming a mixtue by adding aluminum fluoride as a an aluminum ion source and ammonium iodide as a flux compound to powdery raw material for said phosphor composed of zinc sulfide and said copper and gold activator compounds, and firing said thus formed mixture at a temperature from 900° C. to 1000° C. in a hydrogen sulfide atmosphere to produce said phosphor that does not contain any segregated free sulfides of copper and gold on its surfaces.

4,208,300

PHOTOLUMINESCENT MATERIALS AND METHOD OF MANUFACTURING SAME

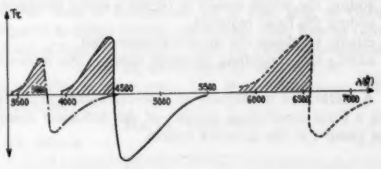
Philippe E. Gravisse, 9, residence Boieldieu, 92 Puteaux, France

Continuation-in-part of Ser. No. 700,871, Jun. 29, 1976, abandoned, which is a continuation-in-part of Ser. No. 615,578, Sep. 22, 1975, which is a continuation of Ser. No. 378,311, Jul. 11, 1973. This application Jun. 30, 1977, Ser. No. 811,617

Claims priority, application France, Oct. 15, 1976, 76 31008

Int. Cl.[2] C09K *11/02, 11/10*

U.S. Cl. 252—301.33 **18 Claims**



1. Materials which are photoluminescent throughout, of the kind which include a synthetic binder whose spectral response extends from the near ultra-violet to the infrared and which has a maximum co-efficient of light transmission, crystalline fillers selected from the group consisting of ground quartz glass, ground quartz, and glass transparent to ultra-violet radiation, said crystalline fillers having a high light transmission within the same spectral range,

further comprising in combination;

(a) 5 to 15% by weight relative to the synthetic binder plus crystalline fillers of at least one phosphorescent sulphide selected from the group consisting of zinc sulphide, cadmium sulphide, strontium sulphide and calcium sulphide,

(b) 0.1 to 1 molar percent relative to the synthetic binder of at least one substance which absorbs light energy in the ultraviolet region below 3900 A and emits light energy within the absorption spectrum of the at least one phosphorescent sulphide, and

(c) 0.1 to 1% by weight relative to the at least one phosphorescent sulphide of one or more fluorescent substances which emit a persistant color which may be different from that emitted by the at least one phosphorescent sulphide.

4,208,301

MICROEMULSION DEFOAMER COMPOSITIONS AND PROCESSES FOR THEIR PRODUCTION AND USE

Charles T. Gammon, Sparta, N.J., assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Jul. 7, 1978, Ser. No. 922,674

Int. Cl.[2] B01D *19/04*

U.S. Cl. 252—321 **16 Claims**

1. A microemulsion defoamer composition comprising:

(a) from about 1 to about 20 parts by weight of water dispersible organic material,

(b) from about 20 to about 50 parts by weight of ethylene oxide condensate selected from the group consisting of ethoxylated polyoxypropylene glycol, ethoxylated alkylphenol, ethoxylated alcohol, ethoxylated fatty acid, ethoxylated ester of fatty acid, ethoxylated amide of fatty acid and ethoxylated alkylamine wherein there are at least ten carbon atoms in the hydrophobic moiety,

(c) from about 1 to about 15 parts by weight of coupling agent selected from the group consisting of hexylene glycol, butylene glycol, propylene glycol, ethylene glycol, diethylene glycol, dipropylene glycol, dibutylene glycol, triethylene glycol, tripropylene glycol, monomethyl ether of propylene glycol, monomethyl ether of dipropylene glycol, monomethyl ether of tripropylene glycol, monobutyl ether of ethylene glycol, monobutyl ether of diethylene glycol and monoethyl ether of ethylene glycol,

(d) from about 76 to about 10 parts by weight of water,

(e) from about 0.5 to about 3 parts by weight of basic material, and

(f) from about 1 to about 5 parts by weight of antigelling agent which is an alcohol having less than eight carbon atoms.

12. A process of producing the composition of claim 1 comprising

(a) mixing the organic material, ethylene oxide condensate and coupling agent until uniform,

(b) adding the water slowly to obtain a milky emulsion,

(c) adding the basic material,

(d) mixing to obtain the microemulsion, and

(e) adding the antigelling agent to stabilize the microemulsion.

13. A method of defoaming an aqueous system comprising adding a foam controlling amount of the defoamer composition of claim 1 to the aqueous system.

4,208,302

PASSIVATING METALS ON CRACKING CATALYSTS

Dwight L. McKay, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 6, 1978, Ser. No. 949,289

Int. Cl.[2] B01J *20/12, 20/6*

U.S. Cl. 252—411 R **11 Claims**

1. A process for passivating a metal selected from the group consisting of nickel, vanadium and iron on a clay based cracking catalyst which comprises contacting the contaminated clay based cracking catalyst having said metal thereon with indium antimonide under elevated temperature conditions sufficient to passivate said metal.

8. A catalyst obtained by contacting a clay based cracking catalyst with indium antimonide under elevated temperature conditions.

4,208,303

PROCESS FOR REGENERATING IRON-ANTIMONY OXIDE CONTAINING CATALYST

Yutaka Sasaki, Yokohama; Yoneichi Ikeda, Kamakura; Masaharu Tashiro, Yokohama, and Toshio Nakamura, Yokosuka, all of Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Oct. 25, 1978, Ser. No. 954,675

Claims priority, application Japan, Oct. 26, 1977, 52-127581

Int. Cl.[2] B01J *23/94, 27/30;* **C07C** *120/02*

U.S. Cl. 252—417 **6 Claims**

1. A method for regenerating a deteriorated iron-antimony oxide containing catalyst comprising as essential components (i) iron, (ii) antimony, (iii) at least one element selected from the group consisting of vanadium, molybdenum and tungsten and (iv) tellurium, having the crystalline structure of an iron-antimony oxide compound, being substantially free of free antimony trioxide (Sb_2O_3) and containing at least 50 wt % of the original tellurium content of the fresh catalyst which comprises calcining said catalyst under a non-reducing atmosphere at a temperature of from about 600° to 950° C. and in the vicinity of or lower than the final calcining temperature used for producing the catalyst.

4,208,304

CATALYST SYSTEM FOR PRODUCING ETHYLENE POLYMERS

Darryl R. Fahey, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 19, 1978, Ser. No. 907,471

Int. Cl.[2] C08F *4/64, 4/68*

U.S. Cl. 252—429 C **14 Claims**

1. A catalyst useful in conjunction with an organoaluminum compound for producing ethylene polymers, said catalyst comprising a composition of titanium, vanadium, and halogen groups prepared by sequentially treating a mixture of titanium and vanadium compounds with (1) an organometallic compound and (2) titanium tetrachloride wherein said titanium compound is described by the formula $Ti(OR)_nX_{4-n}$ in which R is selected from among alkyl, cycloalkyl, aryl, and acyl groups and combinations thereof; each group can contain from 1 to about 20 carbon atoms per molecule; n designates 1, 2, 3, or 4; and X is bromide, chloride, or iodide and the vanadium compound is VX_4 or $VO(OR')_mX_{3-m}$ in which R' is an alkyl group containing from 1 to about 20 carbon atoms, m is 0 to 3 and X is bromide, chloride or iodide.

4,208,305

CRYSTALLINE SILICATES AND PROCESS OF PREPARATION

Herman W. Kouwenhoven, and Willem H. J. Stork, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 7, 1977, Ser. No. 858,136

Claims priority, application Netherlands, Dec. 16, 1976, 7613957

Int. Cl.[2] C01B *33/20, 33/26;* **B01J** *29/04*

U.S. Cl. 252—431 N **14 Claims**

1. Crystalline silicates, characterized in that

(a) they are thermally stable up to temperatures above 600° C.;

(b) after dehydration in vacuum at 400° C. they are capable of absorbing more than 3%w water at 25° C. and saturated water vapor pressure; and

(c) in the dehydrated form they have the following overall composition, in terms of moles of the oxides:

$$(1.0\pm0.3)(R)_{2/n}0.[a\ Fe_2O_3.\ b\ Al_2O_3.\ c\ Ga_2O_3].\ y\ (d\ SiO_2.\ e\ GeO_2),$$

where

R=one or more monovalent or bivalent cations introduced during preparation of said silicates and selected from the group consisting of alkaline metals, alkaline earth metals and organic cations obtained from primary, secondary and tertiary alkylamines and quaternary ammonium compounds;

$a>0.5$

$b\geqq0$;

$c\geqq0$;

$a+b+c=1$;

$y=10$ to 300

$d\geqq0.1$;

$e\geqq0$;

$d+e=1$,

n is the valency of R; and their X-ray diffraction patterns include, inter alia, the reflections given in Table A of this specification.

4,208,306

CATALYST FOR MAKING ACRYLIC ACID FROM ACROLEIN OR PROPYLENE

David L. Childress, Angleton; William V. Hayes, and Richard L. Poppe, both of Clute, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 773,992, Mar. 3, 1977, abandoned, which is a continuation-in-part of Ser. No. 678,274, Apr. 19, 1976, Pat. No. 4,049,577. This application Oct. 26, 1978, Ser. No. 955,045

Int. Cl.[2] B01J *21/06, 21/08*

U.S. Cl. 252—456 **5 Claims**

1. A supported catalyst suitable for oxidizing acrolein to acrylic acid which contains oxides of molybdenum, vanadium, chromium, copper and titanium on an inert support, wherein the atomic ratios of the metals are

$$Mo_{15}V_{5-10}Cr_{0.2-2}Cu_{2-5}Ti_{1-3}.$$

4,208,307

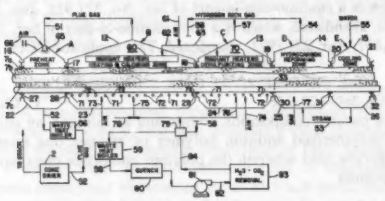
PURIFICATION OF COKE

Irvin H. Lutz, Sagamore Hills, Ohio, assignor to Arthur G. McKee & Company, Independence, Ohio

Filed Sep. 25, 1978, Ser. No. 945,586

Int. Cl.[2] H01B *1/04*

U.S. Cl. 252—502 **17 Claims**



1. A process for continuous production of electrode-grade carbon from green coke having a substantial sulfur content, comprising forming a gas-permeable coke bed on a grate, the grate being divided into a series of distinct zones for sequential treatment of the coke of the bed, each zone having an enclosed chamber in which hot gases are passed upwardly or downwardly through the coke bed on said grate, said zones including a preheat zone, a heating and calcining zone, a desulfurizing zone, and a cooling zone; causing relative movement between the coke bed on said grate and said zones while passing gases through the bed in each zone as the bed moves relatively through each zone; the preheated coke bed on said grate being moved relatively through said heating and calcining zone while heated combustion gases move through said coke bed in that zone to heat the bed to a calcining temperature above 600° C.; the hot coke bed on said grate being moved from said heating zone relatively through said desulfurizing and calcining zone while a hydrogen-containing reducing gas is passed through said coke bed in the latter zone and while a temperature of at least 550° C. is maintained in said latter zone to effect desulfurization of the coke under reducing conditions; the desulfurized coke of said bed thereafter being moved relatively through said cooling zone while passing a cooling gas through the bed in that zone to cool the bed; and removing the desulfurized calcinated coke from the grate.

4,208,308

2-OXABICYCLOOCTANE DERIVATIVES IN PERFUME COMPOSITIONS

Mark A. Sprecker, Sea Bright; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

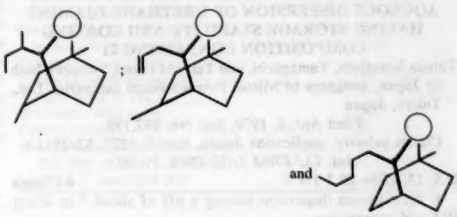
Division of Ser. No. 008,924, Feb. 2, 1979, Pat. No. 4,197,328, which is a continuation-in-part of Ser. No. 953,128, Oct. 20, 1978, Pat. No. 4,195,099. This application Jun. 27, 1979, Ser. No. 52,332

The portion of the term of this patent subsequent to Jun. 10, 1997, has been disclaimed.

Int. Cl.[2] C11B *9/00;* **A61K** *7/46*

U.S. Cl. 252—522 R **9 Claims**

1. A process for augmenting or enchancing the aroma of a perfume composition comprising the step of intimately admixing with a perfume base and aroma augmenting or enhancing quantity of at least one compound selected from the group of cyclic chemical compounds having the structures:



4,208,309

PEARL POLYMER CONTAINING HOLLOW PEARLS

Dieter Kraemer, Mainz; Hermann Plainer, and Waldemar Schleier, both of Darmstadt, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Division of Ser. No. 905,892, May 15, 1978. This application Jun. 18, 1979, Ser. No. 49,438

Claims priority, application Fed. Rep. of Germany, May 20, 1977, 2722751

Int. Cl.[2] C08J *9/00*

U.S. Cl. 260—8 **3 Claims**

1. A pearl polymer product having a protein bonded thereto, said pearl polymer product being composed of hollow pearl particles having a diameter from 5 to 1000 microns and consisting of a cross-linked copolymer comprising at least one member selected from the group consisting of acrylamide, methacrylamide, methylene-bis-acrylamide and methylene-bis-methacrylamide, and additionally comprising a free-radically-copolymerizable monomer having a group by which said copolymer is covalently bonded to a primary amino group or a hydroxy group of said protein, said polymer containing at

least 5 percent by weight of a monomer having at least two carbon-carbon double bonds which are activated by a neighboring phenyl group or carbonyl group, said polymer further being of a composition such that $x+3y \geqq 40$, where x is the percent by weight in the polymer of acrylamide and methacrylamide and y is the percent by weight in the polymer of methylene-bis-acrylamide and methylene-bis-methacrylamide.

4,208,310

ELASTOMERIC BLEND COMPOSITIONS OF A SULFONATED ELASTOMER POLYMER

Robert D. Lundberg; Jan Bock, both of Bridgewater, and Henry S. Makowski, Scotch Plains, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 855,766, Nov. 29, 1977, abandoned. This application Mar. 12, 1979, Ser. No. 19,704

Int. Cl.[2] **C08L** *91/00*

U.S. Cl. 260—23.5 A **35 Claims**

1. An elastomeric blend composition, which consists essentially of:

(a) a neutralized sulfonated elastomeric polymer formed from an elastomeric polymer having from about 0.1 to about 10.0 wt. percent of olefinic unsaturation; said neutralized sulfonated elastomeric polymers having about 15 to about 50 meq. neutralized sulfonate groups per 100 grams of said neutralized sulfonated elastomeric polymer, a counterion of said neutralized sulfonate groups being selected from the group consisting of lead, antimony, ammonium, iron and metals of Groups IA, IIA, IB and IIB of the Periodic Table of Elements and mixtures thereof; and

(b) about 2 to about 15 parts by weight of a non-polar wax per 100 parts by weight of said neutralized sulfonated elastomeric polymer, said non-polar wax having an Mn of less than about 800 and less than about 4 wt. % oxygen.

4,208,311

AQUEOUS DISPERSION OF URETHANE DIAMINE HAVING STORAGE STABILITY AND COATING COMPOSITION CONTAINING IT

Tatsuo Kinoshita, Yamaguchi, and Takashi Izumi, Iwakuni, both of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Apr. 3, 1978, Ser. No. 892,779

Claims priority, application Japan, Apr. 5, 1977, 52/38112

Int. Cl.[2] **C08J** *3/02;* **C08L** *79/00*

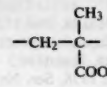
U.S. Cl. 260—29.2 TN **6 Claims**

1. An aqueous dispersion having a pH of about 7 to about 10.5 and comprising

(A) a urethane diamine having a molecular weight of about 5,500 to about 25,000 and expressed by the formula

$$H_2N(R'NHCOROCHN)_nR'NH_2$$
$$\quad\quad\quad

7. A composition comprising an anionically-polymerized addition polymer of at least one ester of methacrylic acid wherein the polymer comprises mers having the formula



wherein

R is an acryloyloxyalkyl or a methacryloyloxyalkyl group, having up to 4 carbon atoms in the alkyl portion,

and wherein n, the average chain length of the polymer, is about 6 to 50 mers; about 1 to 50% by weight of water or an organic solvent; and, optionally, a pigment.

4,208,314

POLYMER/POLYOLS AND PROCESS FOR PRODUCTION THEREOF

David C. Priest, Charlotte, N.C., and Richard A. Langdale-Smith, Vanderhoof, Canada, assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 176,317, Aug. 30, 1971, abandoned. This application Nov. 20, 1973, Ser. No. 417,487

Int. Cl.[2] C08L *35/06*

U.S. Cl. 260—33.2 R **23 Claims**

1. A process for producing a fluid polymer/polyol composition from a reaction mixture containing polyol and a monomer mixture which process comprises polymerizing, in the presence of a free radical catalyst in a back-mixed reactor and at a temperature at which the half life of the catalyst is no longer than six minutes so as to provide a low monomer to polyol ratio throughout the reaction mixture during the polymerization, (1) from 10 to 30 weight percent of a monomer mixture of (a) from 33 to 75 weight percent of acrylonitrile or methacrylonitrile and (b) from 25 to 67 weight percent styrene or alpha-methyl styrene, said weight percents of the nitrile and the styrene or alpha-methyl styrene being based on the total weight of those materials, dissolved or dispersed in (2) from 70 to 90 weight percent of a normally liquid polyol having a hydroxyl number from 20 to 150, said weight percent of the monomer mixture and polyol being based on the total weight of the monomers and the polyol, to produce a fluid polymer polyol composition wherein said polymer consists essentially of polymer particles having diameters less than one micron suspended in the polyol.

4,208,315

FOOTWEAR COMPOSITION OF A BLEND OF ETHYLENE-VINYL ACETATE COPOLYMER, POLY(VINYL CHLORIDE) AND A BLOCK COPOLYMER

Judith E. Zweig, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 1, 1979, Ser. No. 8,658

Int. Cl.[2] B01F *9/08*; C08L *51/00, 53/00*

U.S. Cl. 260—33.6 AQ **8 Claims**

1. A non-delaminating polymeric composition useful for footwear prepared by first melt blending a vinyl chloride resin and an ethylene-vinyl acetate copolymer to form a melt alloy in a weight ratio of vinyl chloride resin to ethylene-vinyl acetate copolymer of between about 95:5 and about 50:50 and then melt blending from about 5 to less than 35 parts by weight of said melt alloy with:

(a) 100 parts by weight of a block copolymer having at least two monoalkenyl arene polymer end blocks A and at least one conjugated diene mid block B, each block A having an average molecular weight between about 5,000 and 25,000 and each block B having an average molecular weight between about 15,000 and about 200,000, said blocks A comprising 8–65% by weight of the copolymer;

(b) about 0 to about 200 parts by weight of a hydrocarbon rubber extending oil; and

(c) about 0 to about 250 parts by weight of a finely divided filler;

wherein the melt blending takes place in the absence of any PVC plasticizers and wherein the viscosity ratio of the block copolymer viscosity divided by the viscosity of the melt alloy is between about 0.2 and about 4.0 at the melt processing temperature.

4,208,316

HYDROPHOBIC PRECIPITATED SILICIC ACID AND COMPOSITIONS CONTAINING SAME

Peter Nauroth, Wesseling; Heinz Esch, Wesseling-Urfeld; Robert Kuhlmann, Erftstadt; Rudolf Bode, Bad Orb; Arthur Reisert, Kahl; Harald Bühler, and Günter Türk, both of Hanau, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 29, 1978, Ser. No. 920,515

Int. Cl.[2] C08L *83/04*

U.S. Cl. 260—37 SB **6 Claims**

1. Hydrophobic precipitated silicic acid, having the following characteristics

BET-Surface according to DIN 66 131	m^2/g	110 ± 40
Average size of the primary particles from EM records	mμ (nm)	15–22
Losses in weight at drying according to DIN 55 921 after 2 hrs at 105 ° C.	%	<2.5
Weight loss at red heat (related to the substance dryed 2 hrs at 105° C. according to DIN 55 921	%	5.5 ± 1.5
pH value (in 5% aqueous methanolic suspension) according to DIN 53 200		7.5 ± 1.0
Conductivity (in 4% aqueous methanolic suspension)	μS	<600
Tamping density of the unaerated substance according to DIN 53 194	g/l	130 ± 40
Wettability with water		<0.1
Carbon content	%	2.5 ± 0.6
Water absorption at 30 ° C. and 30% RH (relative humidity)	%	1.2 ± 0.4
at 30 ° C. amd 70% RH	%	1.5 ± 0.5

3. Hardenable elastomeric composition comprising an elastomer and the precipitated silicic acid as defined in claim 1 in an amount to produce a strengthening effect in said elastomer.

4,208,317

FLAMEPROOFED PLASTIC COMPOSITIONS

Jacqueline Cerny, and Gilbert Vivant, both of Lyons, France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 690,845, May 28, 1976, abandoned. This application Mar. 23, 1978, Ser. No. 889,333

Claims priority, application France, Jun. 10, 1975, 75 18040

The portion of the term of this patent subsequent to May 30, 1995, has been disclaimed.

Int. Cl.[2] C08L *61/10*; C08K *3/02*

U.S. Cl. 260—38 **6 Claims**

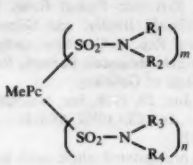
1. Plastic based compositions flameproofed with 0.1% to 20% by weight, relative to the plastic, of red phosphorus in the form of particles having a mean diameter of less than 200 μ, and encapsulated in a polymer which does not have a melting point or softening point below 90° C. and has a mean molecular weight greater than 2,000 and in which the polymer is present in an amount within the range of 5 to 80% by weight of the red phosphorus.

4,208,318
METHOD FOR COLORING THERMOPLASTIC RESINS

Seibei Ono, Nagaokakyo, and Koichi Shibuya, Takatsuki, both of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Jun. 13, 1978, Ser. No. 915,006
Int. Cl.[2] C08K 3/04, 5/42, 5/56
U.S. Cl. 260—40 P 10 Claims

1. A method for mass coloring a thermoplastic resin with a carbon black pigment, which comprises conjointly using a sulfonamide-substituted metal phthalocyanine dyestuff expressed by the general formula



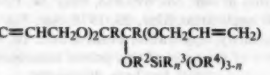
wherein MePc is a metal phthalocyanine residue, R_1 is a hydrogen atom or an alkyl group, R_2 is an alkyl group, R_3 is a hydrogen atom or an alkoxyalkyl group, R_4 is an alkoxyalkyl group, m is an integer of 0 to 4, n is an integer of 0 to 4, and m+n is an integer of 1 to 4, thereby to remove a reddish hue peculiar to coloration by carbon black.

4,208,319
PROCESS FOR THE PREPARATION AND USE OF SILANES

Peter August; Peter Huber; Klaus Adler, and Wilfried Dressler, all of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Nov. 16, 1977, Ser. No. 852,129
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1976, 2655877
Int. Cl.[2] C08J 3/24; C08L 51/04
U.S. Cl. 260—42.39 7 Claims

1. A cross-linked composition which is obtained by heating at an elevated temperature a composition containing a cross-linking agent selected from the group consisting of sulfur, sulfur compounds and peroxides, an organic polymer which is capable of being cross-linked with the cross-linking agent, a filler which is present in an amount of from 10 to 250 parts by weight per 100 parts by weight of organic polymer and an organosilane of the formula



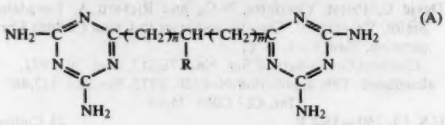
in which R is selected from the group consisting of hydrogen and monovalent hydrocarbon radicals which are free of aliphatic multiple bonds, R^2 is a bivalent hydrocarbon radical free of aliphatic multiple bonds, R^3 is a monovalent hydrocarbon radical having from 1 to 8 carbon atoms and is free of aliphatic multiple bonds, R^4 is selected from the group consisting of monovalent hydrocarbon radicals having from 1 to 8 carbon atoms and monovalent hydrocarbon radicals interrupted by at least one ether oxygen atom and n is 0, 1 or 2.

4,208,320
FLAME RETARDANT RESIN COMPOSITION COMPRISING REACTION PRODUCT OF POLYGUANAMINE COMPOUND AND CYANURIC OR ISOCYANURIC ACID COMPOUND

Masazumi Chono; Kunio Maeda, both of Yokohama, and Kunio Saito, Chigasaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

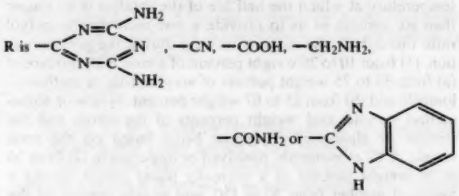
Filed Aug. 23, 1978, Ser. No. 936,044
Claims priority, application Japan, Aug. 30, 1977, 52-103154; Aug. 30, 1977, 52-103155
Int. Cl.[2] C08K 5/29
U.S. Cl. 260—45.8 NT 7 Claims

1. A flame retardant resin composition comprising 50 to 97% by weight of a thermoplastic or thermosetting resin and 3 to 50% by weight of a salt which is the reaction product of a polyguanamine compound represented by the general formula (A),

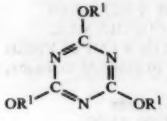


(A)

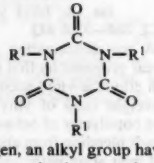
wherein n and m each represent zero or positive integer; and



when n=2 and m=3, or R is H when n is other than 2, m is other than 3 and n+m=1–6, and a cyanuric acid compound represented by the general formula (B) or an isocyanuric acid compound represented by the general formula (C),



(B),



(C)

wherein each R^1 represents hydrogen, an alkyl group having 1 to 3 carbon atoms, an oxyalkyl group having 1 to 3 carbon atoms, or a phenyl group; at least one of the R^1's is hydrogen or an oxyalkyl group having 1 to 3 carbon atoms; and R^1's in the same molecule may be the same or different; and wherein, in the reaction to form said salt, the molar ratio of the acid compound (B) or (C) to the polyguanamine compound (A) is 0.1 to 6 when the polyguanamine compound is a triguanamine compound and 0.1 to 4 when the polyguanamine compound is a diguanamine compound.

4,208,321

POLYAMIDE RESINS FLAME RETARDED BY POLY(METAL PHOSPHINATE)S

Stanley R. Sandler, Springfield, Del., assignor to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 895,839, Apr. 13, 1978. This application Apr. 27, 1979, Ser. No. 33,933

Int. Cl.[2] C08K *5/53;* **C08G** *69/48*

U.S. Cl. 260—45.75 K **7 Claims**

1. The flame retarded resin compositions comprising a polyamide and a flame retardant amount namely 2.5 to 20 parts by weight per 100 parts by weight of polyamide, of at least one poly (metal phosphinate)s having one, two, three or four phosphinate groups per coordination center and selected from the respective formulae:

(a) MX, MaX, Ma_2X, Ma_3X, M(AA)X, $M(AA)_2X$,

(b) MX_2, MaX_{2L}, Ma_2X_2, $MabX_2$, $M(AA)X_2$,

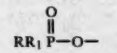
(c) MX_3, MaX_{3L}, Ma_2X_3, $MabX_3$, $M(AA)X_3$ or

(d) MX_4

wherein

M is a metal selected from the group consisting of beryllium, magnesium, calcium, strontium, barium, titanium, zirconium, antimony, bismuth, chromium, molybdenum, tungsten, manganese, iron, ruthenium, cobalt, rhodium, iridium, nickel, palladium, platinum, copper, silver, zinc, cadmium, mercury, aluminum, tin, lead and mixtures thereof;

X is a disubstituted phosphinate group having the structure



wherein

R and R_1 are independently selected from the group consisting of an aliphatic group of 1 to 20 carbons, a cycloaliphatic group of 3 to 20 carbons, an aromatic group of 6 to 12 carbons and said aliphatic, cycloaliphatic or aromatic groups can have substituted groups thereon, the substituted group being selected from the class consisting of a halogen, ether, hydroxyl, alkoxyl, ketone and ester;

a and b are independent unidentate groups selected from the class consisting of oxy, alkoxy, hydroxyl and halide; and

AA is a bidentate ligand selected from the group consisting of acetylacetonate, picolinate, 8-hydroxyquinolinate, dimethylglyoximate and glycinate.

4,208,322

POLYESTER-POLYAMIDE RESINS FLAME RETARDED BY POLY(METAL PHOSPHINATE)S

Stanley R. Sandler, Springfield, Del., assignor to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 895,839, Apr. 13, 1978. This application Apr. 27, 1979, Ser. No. 34,092

Int. Cl.[2] C08K *5/53;* **C08L** *77/12*

U.S. Cl. 260—45.75 K **8 Claims**

1. The flame retarded resin compositions comprising a polyester-polyamide and a flame retardant amount namely 2.5 to 20 parts by weight per 100 parts by weight of polyester-polyamide, of at least one poly(metal phosphinate)s having one, two, three or four phosphinate groups per coordination center and selected from the respective formulae:

(a) MX, MaX, Ma_2X, Ma_3X, M(AA)X, $M(AA)_2X$,

(b) MX_2, MaX_2, Ma_2X_2, $MabX_2$, $M(AA)X_2$,

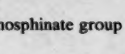
(c) MX_3, MaX_3, Ma_2X_3, $MabX_3$, $M(AA)X_3$ or

(d) MX_4

wherein

M is a metal selected from the group consisting of beryllium, magnesium, calcium, strontium, barium, titanium, zirconium, antimony, bismuth, chromium, molybdenum, tungsten, manganese, iron, ruthenium, cobalt, rhodium, iridium, nickel, palladium, platinum, copper, silver, zinc, cadmium, mercury, aluminum, tin, lead and mixtures thereof;

X is a disubstituted phosphinate group having the structure



wherein

R and R_1 are independently selected from the group consisting of an aliphatic group of 1 to 20 carbons, a cycloaliphatic group of 3 to 20 carbons, an aromatic group of 6 to 12 carbons and said aliphatic, cycloaliphatic or aromatic groups can have substituted groups thereon, the substituted group being selected from the class consisting of a halogen, ether, hydroxyl, alkoxyl, ketone and ester;

a and b are independent unidentate groups selected from the class consisting of oxy, alkoxy, hydroxyl and halide; and

AA is a bidentate ligand selected from the group consisting of acetylacetonate, picolinate, 8-hydroxyquinolinate, dimethylglyoximate and glycinate.

4,208,323

PROCESS FOR ISOLATION OF PROTEINS USING FOOD GRADE SALT SOLUTIONS AT SPECIFIED PH AND IONIC STRENGTH

E. Donald Murray, Winnipeg; Terrence J. Maurice, Colborne; Larry D. Barker, Cobourg, and Chester D. Myers, Ajax, all of Canada, assignors to General Foods, Limited, Toronto, Canada

Filed Mar. 20, 1979, Ser. No. 22,229

Claims priority, application Canada, Mar. 23, 1978, 299713

Int. Cl.[2] A23J *1/12, 1/14*

U.S. Cl. 260—112 G **26 Claims**

1. A process of preparing a protein isolate, which comprises:

(a) extracting a protein source material with an aqueous food grade salt solution having an ionic strength of at least about 0.2 and a pH value of about 5 to about 6.8 at a temperature of about 15° to about 35° C. to cause solubilization of protein in said protein source material and form a protein solution;

(b) increasing the protein concentration of said protein solution while maintaining the ionic strength thereof substantially constant;

(c) diluting the concentrated protein solution to an ionic strength below about 0.2 to cause the formation of discrete protein particles in the aqueous phase at least partially in the form of protein micelles, and

(d) settling the protein particles to form a mass of protein isolate at least partially in the form of an amorphous sticky gelatinous gluten-like protein micellar mass.

4,208,324

DISPERSE DIAMINOPYRIDINE-3-AZO DYESTUFFS

Visvanathan Ramanathan, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

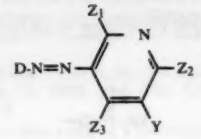
Continuation of Ser. No. 737,137, Oct. 29, 1976, abandoned, which is a continuation of Ser. No. 602,165, Aug. 4, 1975, abandoned, which is a continuation of Ser. No. 457,882, Apr. 4, 1974, abandoned, which is a continuation-in-part of Ser. No. 314,487, Dec. 12, 1972, abandoned. This application Jul. 7, 1978, Ser. No. 922,708

Claims priority, application Switzerland, Dec. 28, 1971, 19044/71; Apr. 11, 1973, 5197/73

Int. Cl.[2] C09B *29/34*

U.S. Cl. 260—156 **20 Claims**

1. A disperse azo dyestuff, free from water solubilizing groups, of the formula



wherein

Y is —CN or —$CONH_2$,

two of Z_1, Z_2 and Z_3 are —NR'R'' and the third is —NR'R'', —OR''' or —SR''',

where

R', R'' and R''' independently represent hydrogen.

alkyl of 1 to 12 carbon atoms, which is unsubstituted or substituted by:

hydroxy, cyano, carboxy, carbalkoxy of 2 to 6 carbon atoms, alkoxy of 1 to 18 carbon atoms, phenoxy, acyloxy, acylamino, phenyl or phenyl substituted by halo, lower alkyl, lower alkoxy, β-hydroxyethyl, or lower carboalkoxy; and wherein acyl is alkanoyl of up to 5 carbon atoms, alkylcarbamyl of up to 5 carbon atoms, alkoxycarbonyl of up to 5 carbon atoms, phenylcarbamyl, phenoxycarbonyl benzoyl, phenoxyacetyl, chloroacetyl or phenylacetyl;

phenyl which is unsubstituted or substituted by: chloro, bromo, fluoro; alkyl of 1 to 16 carbon atoms which is unsubstituted or substituted by bromo, chloro, lower alkoxy, cyano or lower alkoxycarbonyl; lower alkoxycarbonyl, lower alkoxysulfonyl, acetyl, aminocarbonyloxy, aminosulfonyl, lower alkylaminosulfonyl, di(lower alkyl) sulfonyl, methylsulfonyl, methylsulfinyl, methylthio, ethylthio or phenylthio;

cyclohexyl; or

R' and R'' taken together with the nitrogen to which they are attached, represent piperidino, pyrrolidino, morpholino, piperazino, methylpiperazino or acetylpiperazino; and

D is phenyl or phenyl substituted by: halo, hydroxy, cyano, thiocyano, nitro, lower alkyl, triflurormethyl, lower alkoxy, formyl, lower alkylcarbonyl, benzoyl, methylbenzoyl, lower alkoxycarbonyl, benzyloxycarbonyl, cyclohexyloxycarbonyl, phenoxycarbonyl, lower alkoxycarbonyloxy, benzoyloxycarbonyloxy, lower alkylcarbonyloxy, benzoyloxy, lower alkylcarbonylamino, benzoylamino, lower alkylsulfonyl, chloroethylsulfonyl, hydroxyethylsulfonyl, aminosulfonyl, lower alkylaminosulfonyl, di(lower alkyl) aminosulfonyl, di(hydroxyethyl) aminosulfonyl, phenylaminosulfonyl, (chloro- or methoxy-) phenylaminosulfonyl, benzylaminosulfonyl, N-piperidylsulfonyl, N-morpholinosulfonyl, lower alkylsulfonyloxy, cyclohexylsulfonyloxy, chloromethylsulfonyloxy, cyanoethylsulfonyloxy, phenylsulfonyloxy, aminosulfonyloxy, (chloro- or methoxy-) phenylsulfonyloxy, N-morpholinosulfonyloxy, ethyleneaminosulfonyloxy, lower (monoalkyl- or dialkyl-) aminosulfonyloxy, phenylaminosulfonyloxy, N-phenyl-N(lower alkyl) aminosulfonyloxy, N-(methoxy- or chloro-) phenyl aminosulfonyloxy, phenylamino, nitrophenylamino, dinitrophenylamino, phenyl, phenoxy or acetylaminophenyl;

phenylazophenyl which unsubstituted or substituted by: chloro, bromo, hydroxy, cyano, nitro, lower alkyl, trifluoromethyl, lower alkoxy of phenoxy;

naphthyl which is unsubstituted or substituted by: methoxy, ethoxy, phenylazo or dimethylaminosulfonyl; or

D is a heterocyclic radical selected from: thiazolyl which is unsubstituted or substituted by chloro, bromo, nitro, cyano, thiocyano, lower alkyl, lower alkoxy, lower alkylmercapto, phenyl, benzyl, phenethyl, lower alkoxycarbonyl, trifluoromethyl, lower alkylcarbonyl or lower alkylsulfonyl; benzthiazolyl which is unsubstituted or substituted by chloro, bromo, cyano, thiocyano, nitro, lower alkyl, lower alkoxy, benzyl, phenethyl, lower alkylsulfonyl, phenyl, lower alkylmercapto, lower alkoxycarbonyl, lower alkylcarbonyl, trifluoromethyl, cyanoethylsulfonyl, or aminosulfonyl;

pyrazoyl which is unsubstituted or substituted by cyano, lower alkyl, lower alkoxy, lower alkoxycarbonyl or phenyl; thiadiazolyl which is unsubstituted or substituted by lower alkoxy, lower alkyl, phenyl, lower alkylsulfonyl or lower alkylmercapto;

imidazoyl which is unsubstituted or substituted by nitro, or lower alkyl;

thienyl which is unsubstituted or substituted by nitro, lower alkyl, lower alkylsulfonyl, lower alkoxycarbonyl or acetyl;

isothiazolyl or isothiazole substituted by lower alkyl, lower alkylsulfonyl, lower alkoxycarbonyl, nitro, cyano or phenyl; and

benzisothiazolyl which is unsubstituted or substituted by lower alkyl, nitro or halo.

4,208,325

PREPARATION OF 1-OXAPENICILLINS AND 4-ACYLOXY AZETIDINONE INTERMEDIATES THEREFOR

Saul Wolfe, Kingston, Canada, assignor to Queen's University at Kingston, Kingston, Canada

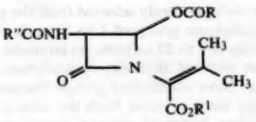
Division of Ser. No. 587,571, Jun. 17, 1975, Pat. No. 4,071,512. This application Nov. 30, 1977, Ser. No. 856,121

Claims priority, application Canada, Jun. 19, 1974, 202890

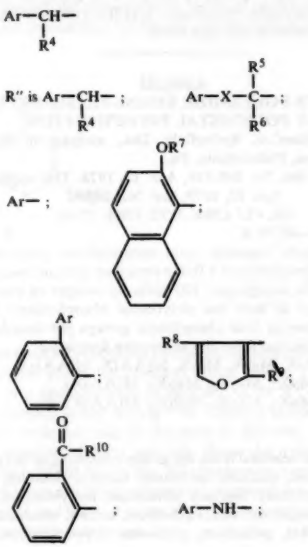
Int. Cl.[2] **C07D** *205/08, 403/12, 409/12, 407/12*

U.S. Cl. 260—239 A **2 Claims**

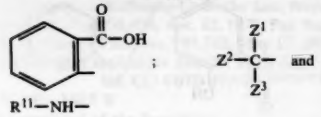
1. The CIS compound of the formula:



wherein R stand for loweralkyl

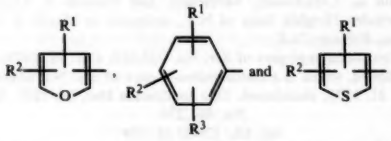


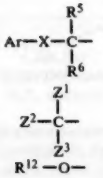
-continued



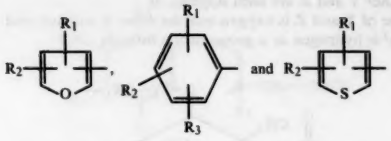
wherein R^4 represents a member selected from the group consisting of hydrogen, amino, carbobenzoxyamino, phenyl, fluoro, chloro, bromo, iodo, and (lower)-alkoxy; X represents a member selected from the group consisting of oxygen and sulfur; R^5 and R^6 each represent a member selected from the group consisting of hydrogen, phenyl, benzyl, phenethyl and (lower)alkyl; R^7 represents (lower)alkyl; R^8 and R^9 each represent a member selected from the group consisting of (lower)alkyl, (lower)alkylthio, benzylthio, cyclohexyl, cyclopentyl, cycloheptyl, benzyl, phenethyl, phenylpropyl, furyl, thienyl, naphthyl and Ar—; R^{10} represents a member selected from the group consisting of (lower)alkylamino, di(lower)alkylamino, cycloalkylamino having from 3 to 7 carbon atoms inclusive, allylamino, diallylamino, phenyl(lower)-alkylamino, morpholino, (lower)alkylmorpholino, di(lower)-alkylmorpholino, morpholino(lower)alkylamino, pyrrolidino, (lower) alkylpyrrlidino, di(lower)alkylpyrrolidino, N,N-hexamethyleneimino, piperidino, (lower)alkylpiperidino, di(lower)-alkylpiperidino, 1,2,5,6-tetrahydropyridino, N-(lower)-alkylpiperazino, N-phenylpiperazino, N-(lower)alkyl(lower)-alkylpiperazino, N-(lower)-alkyl-di(lower)alkylpiperazino, furfurylamino, tetrahydrofurfurylamino, N-(lower)alkyl-N-furfurylamino, N-alkyl-N-anilino and (lower)alkoxyanilino; Z^1, Z^2 and Z^3 each represent a member selected from the group consisting of (lower)alkyl and Ar—; R^{11} represents a member selected from the group consisting of (lower)alkyl, (lower)-cycloalkyl, naphthyl, benzyl, phenethyl and

and Ar— represents a monovalent radical having one of the formulae:





wherein Ar is a monovalent radical selected from



wherein

R_1, R_2 and R_3 are each a member selected from hydrogen, chloro, bromo, iodo, trifluoromethyl, phenyl, loweralkyl and loweralkoxy, but only one of said R_1, R_2 and R_3 may represent phenyl;

(R^4 is hydrogen, amino, carbobenzoxyamino, phenyl, fluoro, chloro, bromo, iodo, and loweralkoxy;

X is oxygen or sulfur;

R^5 and R^6 are hydrogen, phenyl, benzyl, phenethyl and loweralkyl;

Z^1, Z^2 and Z^3 stand for loweralkyl or the Ar—group;

R^{12} is 2,2,2-trichloroethyl or benzyl;

R^1 is hydrogen, loweralkyl, benzyl, benzhydryl, loweralkoxybenzyl, or 2,2,2-trichloroethyl; and

wherein R^1, R^2 and R^3 are each a member selected from the group consisting of hydrogen, chloro, bromo, iodo, trifluoromethyl, phenyl, (lower)alkyl and (llower)alkoxy, but only one of the groups R^1, R^2 and R^3 may represent phenyl.

4,208,326

PLEUROMUTILIN ESTERS

Helmut Egger, and Hellmuth Reinshagen, both of Vienna, Austria, assignors to Sandoz Ltd., Basel, Switzerland

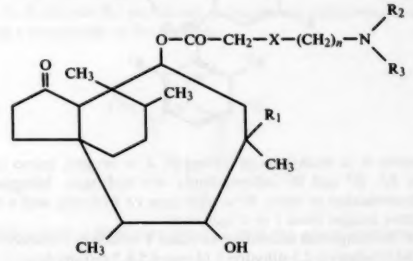
Division of Ser. No. 758,133, Jan. 10, 1977, Pat. No. 4,107,164, which is a division of Ser. No. 606,430, Aug. 21, 1975, Pat. No. 4,032,530, which is a division of Ser. No. 427,514, Dec. 26, 1973, Pat. No. 3,919,290, which is a continuation-in-part of Ser. No. 294,642, Oct. 3, 1972, abandoned. This application Jun. 5, 1978, Ser. No. 912,497

Claims priority, application Switzerland, Oct. 5, 1971, 14450/71; Oct. 5, 1971, 14451/71; May 25, 1972, 7738/72; May 25, 1972, 7739/72; May 25, 1972, 7740/72

Int. Cl.[2] **A61K** *31/215, 31/22, 31/55;* **C07D** *295/14*

U.S. Cl. 260—239 BF **36 Claims**

1. A compound of the formula:

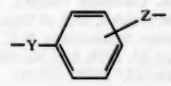


wherein

either R_1 is ethyl or vinyl,

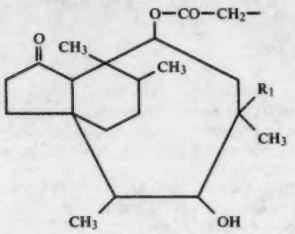
n is an integer from 2 to 5,

X is sulphur, a group



or a group $=N-R_4'$,

wherein
either Y and Z are both sulphur, or
one of Y and Z is oxygen and the other is sulphur, and
R_4' is hydrogen or a group of the formula



wherein
R_1 is as defined above,
each of R_2 and R_3 is alkyl of 1 to 10 carbon atoms when X is other than sulphur, or
R_2 and R_3 together with the nitrogen atom is morpholino, thiomorpholino, pyrrolidino, or 1-hexahydro-1H-azepinyl,
and pharmaceutically acceptable acid addition salts and quaternary salts thereof.

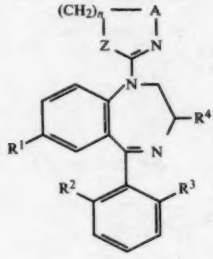
4,208,327

5-ARYL-1-(2-OXAZOLIN-2-YL)-1H-1,4-BENZODIAZEPINES AND RELATED COMPOUNDS

Peter K. Yonan, Morton Grove, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Filed Apr. 3, 1979, Ser. No. 26,701
Int. Cl.[2] C07D *417/04, 403/04, 413/04*
U.S. Cl. 260—239.3 R **17 Claims**

1. A compound of the formula



wherein A is methylene or carbonyl; Z is oxygen, imino or thio; R^1, R^2 and R^3 independently are hydrogen, halogen, trifluoromethyl or nitro; R^4 is hydrogen or hydroxy; and n is positive integer from 1 to 3 inclusive.

16. A compound according to claim **1** which is 7-chloro-5-(o-chlorophenyl)-2,3-dihydro-1-(4-oxo-4,5,6,7-tetrahydro-1,3-oxazepin-2-yl)-1H-1,4-benzodiazepine.

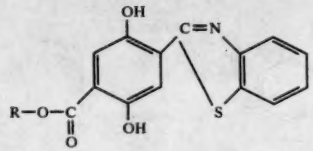
4,208,328

ALKYL 3,5-DIHYDROXY-4-(2-BENZOTHIAZOLYL)BENZOATES

Francois A. Lavallee, Cleveland Heights, and Raymond H. Pritschau, Highland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 27, 1978, Ser. No. 900,667
Int. Cl.[2] C07D *277/66*
U.S. Cl. 548—180 **2 Claims**

1. A phosphor having the formula:



wherein R= lower alkyl groups having up to 6 carbon atoms, said phosphor providing red color emission when excited with 3650 Angstrom radiation.

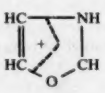
4,208,329

OXAZOLE REMOVED FROM ACRYLONITRILE AS OXAZOLE SULFATE

Robert A. Smiley, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Jul. 31, 1978, Ser. No. 929,774
Int. Cl.[2] C07C *120/14;* **C07D** *263/08*
U.S. Cl. 548—239 **3 Claims**

1. In a process for removing oxazole from a mixture comprising acrylonitrile and oxazole prepared by the ammoxidation of propylene, the improvement which comprises contacting the mixture with sulfuric acid having a concentration greater than 70% forming oxazole sulfate of the formula:



and separating the oxazole sulfate from the acrylonitrile.

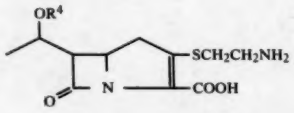
4,208,330

O-DERIVATIVES OF THIENAMYCIN

Burton G. Christensen, Metuchen, and William J. Leanza, Berkeley Heights, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 733,655, Oct. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 634,006, Nov. 21, 1975, abandoned. This application Dec. 16, 1977, Ser. No. 861,234
Int. Cl.[2] C07D *487/04*
U.S. Cl. 260—326.31 **2 Claims**

1. The compound having the structural formula:



and the non-toxic, pharmaceutically acceptable salts thereof; wherein R^4 is lower alkyl, phosphono, lower alkylcarbamoyl, lower alkoxylower alkyl, lower alkanoyl, methanesulfono, or sulfo, the designation lower alkyl, lower alkanoyl, or lower alkoxy having 1–6 carbon atoms.

4,208,331

SYNTHESIS OF OPTICALLY ACTIVE VITAMIN E

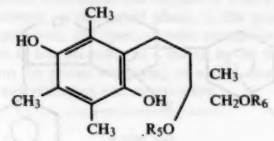
Noal Cohen, Montclair, and Gabriel Saucy, Essex Fells, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 895,424, Apr. 12, 1978, Pat. No. 4,151,177, which is a division of Ser. No. 797,712, May 17, 1977, Pat. No. 4,113,740. This application Jan. 29, 1979, Ser. No. 7,053

Int. Cl.[2] C07D *317/10*

U.S. Cl. 260—340.9 R **2 Claims**

1. A compound of the formula



wherein R_5 and R_6 are individually hydrogen or taken together from

and R_7 and R_8 form lower alkyl.

4,208,332

SYNTHESIS OF OPTICALLY ACTIVE VITAMIN E

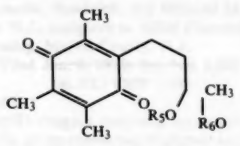
Noal Cohen, Montclair, and Gabriel Saucy, Essex Fells, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 895,424, Apr. 12, 1978, Pat. No. 4,151,177, which is a division of Ser. No. 797,712, May 17, 1977, Pat. No. 4,113,740. This application Jan. 29, 1979, Ser. No. 7,054

Int. Cl.[2] C07D *317/00*

U.S. Cl. 260—340.9 R **3 Claims**

1. A compound of the formula



wherein R_5 and R_6 are individually hydrogen or taken together form

and R_7 and R_8 are lower alkyl.

4,208,333

PREPARATION OF CHROMAN-2-ACETIC ACIDS

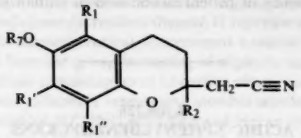
Noal Cohen, Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 873,184, Jan. 30, 1978, abandoned. This application Dec. 15, 1978, Ser. No. 970,035

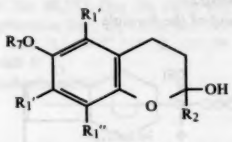
Int. Cl.[2] C07D *311/72*

U.S. Cl. 260—345.5 **2 Claims**

1. A process for producing a compound of the formula:



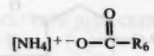
wherein R_7 taken together with its attached oxygen atoms forms an ester protecting group removable by hydrolysis; R_2 is lower alkyl; and R_1, R_1' and R_1'' are hydrogen or lower alkyl comprising reacting a compound of the formula



wherein R_2, R_7, R_1, R_1' and R_1'' are as above with a compound of the formula

$$N{\equiv}C{-}CH_2{-}COOH$$

with presence of a compound of the formula



wherein R_6 is lower alkyl or aryl in an organic amine base, said reaction being carried out at temperatures of from 80° C. to 150° C.

4,208,334

PROCESS FOR PREPARATION OF α-TOCOPHEROL

Peter Fitton, Pequannock, and Ronald Propper, Fair Lawn, both of N.J., assignors to Hoffmann-La Roches Inc., Nutley, N.J.

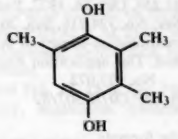
Filed Dec. 22, 1978, Ser. No. 972,573

Int. Cl.[2] C07D *311/72*

U.S. Cl. 260—345.5 **9 Claims**

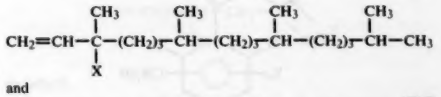
1. A process for producing α-tocopherol comprising reacting a compound of the formula:

II



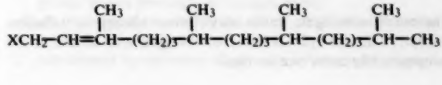
with a phytyl derivative selected from the group consisting of

III-A



and

III-B



wherein X is a leaving group
in the presence of trifluoroacetic acid or trifluoroacetic acid anhydride.

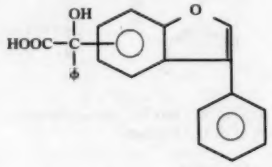
4,208,335

ACIDIC 3-PHENYLBENZOFURANS

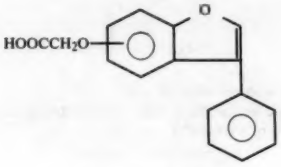
Robert A. Scherrer, White Bear Lake; Walton J. Hammar, St. Paul, and Richard M. Stern, Cottage Grove, all of Minn., assignors to Riker Laboratories, Inc., Northridge, Calif.

Division of Ser. No. 861,891, Dec. 19, 1977, Pat. No. 4,143,154. This application Dec. 20, 1978, Ser. No. 971,541
Int. Cl.[2] C07D *307/82*
U.S. Cl. 260—346.22 **3 Claims**

1. A compound of the formula



2. A compound of the formula



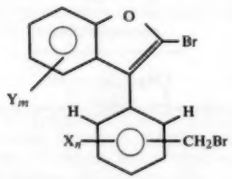
4,208,336

CERTAIN 3-BROMOMETHYLPHENYL-2-BROMO-BENZOFURANS

Robert A. Scherrer, White Bear Lake, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.

Division of Ser. No. 842,234, Oct. 14, 1977, Pat. No. 4,124,605, which is a division of Ser. No. 724,716, Sep. 20, 1976, Pat. No. 4,066,782, which is a continuation-in-part of Ser. No. 616,276, Sep. 24, 1975, abandoned. This application Aug. 28, 1978, Ser. No. 937,072
Int. Cl.[2] C07D *307/82*
U.S. Cl. 260—346.22 **2 Claims**

1. A compound of the formula



wherein X is halogen, lower alkyl, lower alkoxy or trifluoromethyl, Y is methyl, methoxy or halogen and m and n are independently zero, one or two.

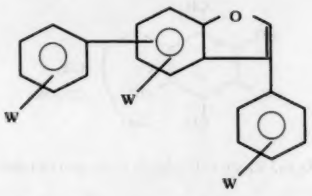
4,208,337

DIPHENYLBENZOFURAN COMPOUNDS

Walton J. Hammar, and Mark A. Rustad, both of St. Paul, Minn., assignors to Riker Laboratories, Inc., Northridge, Calif.

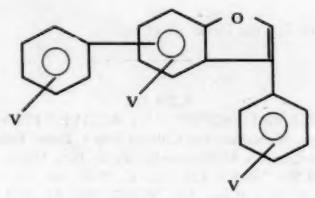
Division of Ser. No. 862,014, Dec. 19, 1977, Pat. No. 4,153,721. This application Feb. 21, 1979, Ser. No. 13,543
Int. Cl.[2] C07D *307/80, 307/79*
U.S. Cl. 260—346.22 **2 Claims**

1. A compound of the formula



wherein one of the W groups is cyano and two of the W groups are hydrogen.

2. A compound of the formula



wherein one of the V groups is carboxy and two of the V groups are hydrogen.

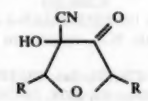
4,208,338

CYANO DIHYDRO FURANONES

Ulrich Huber, Zurich, and Hans J. Wild, Meilen, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 928,136, Jul. 26, 1978. This application Apr. 23, 1979, Ser. No. 32,446
Claims priority, application Luxembourg, Aug. 11, 1977, 77955; Dec. 14, 1977, 78691
Int. Cl.[2] C07D *307/32*
U.S. Cl. 260—347.8 **8 Claims**

1. Compounds of the general formula



wherein R represents a hydrogen atom or the methyl or ethyl group.

4,208,339

PROCESS FOR THE PREPARATION OF PARA-BENZOQUINONE

Michel Costantini, Lyon, and Michel Jouffret, Francheville Le Bas, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Jun. 23, 1978, Ser. No. 918,579
Claims priority, application France, Jun. 27, 1977, 77 20709
Int. Cl.[2] C07C *45/16, 49/64*
U.S. Cl. 260—396 R 19 Claims

1. In a process for the preparation of p-benzoquinone by oxidizing phenol with molecular oxygen or with a gas in which oxygen is present, in the liquid phase, in the presence of cuprous or cupric ions, the improvement comprising contacting the reactants in the presence of a metal, in the metallic form, selected from the group consisting of nickel, iron, tin, cobalt, chromium, molybdenum and magnesium.

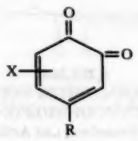
4,208,340

SUBSTITUTED ORTHO-QUINONES AND DERIVATIVES

Richard J. Lee, Downers Grove, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Oct. 30, 1978, Ser. No. 955,930
Int. Cl.[2] C07C *49/62, 49/73, 49/735*
U.S. Cl. 260—396 R 5 Claims

1. An ortho-quinone having the structure:



wherein R is an alkyl chain of at least 12 carbon atoms or a polymer of an olefin of at least three carbon atoms; and X is selected from the group consisting of hydrogen, chlorine, bromine, and iodine.

4,208,341

COPPER (II) REAGENT AND PREPARATION THEREOF

Timothy R. Demmin, Randolph, and Milorad M. Rogic, Whippany, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jan. 8, 1979, Ser. No. 1,990
Int. Cl.[2] C07F *1/08*
U.S. Cl. 260—438.1 10 Claims

1. A copper(II) reagent prepared by reacting an alcohol selected from the group consisting of phenol and alkanediols of 2–6 carbons with a paired spin copper oxide having equimolar amounts of copper and oxygen and showing no absorption by Electron Spin Resonance, said paired spin copper oxide having a relative minimum in the visible spectrum of about 565 nm and a relative maximum of about 730 nm.

4,208,342

POLYETHYLENE SILICON COMPOUNDS

Michel Bargain, Lyons, and Marcel Lefort, Caluire, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Jul. 20, 1977, Ser. No. 817,341
Claims priority, application France, Aug. 17, 1976, 76 25535
Int. Cl.[2] C07F *7/08, 7/10*
U.S. Cl. 556—436 7 Claims

1. Organosilicon compounds having the general formula:

$$(R-Si(R_1)_2-G-Y-)_nQ$$

wherein, R represents a monovalent aliphatic hydrocarbon or halocarbon radical containing up to 10 carbon atoms and including a carbon-carbon double bond; R_1 represents member selected from the group consisting of a monovalent hydrocarbon radical containing up to 10 carbon atoms, cycloalkyl radicals having 3 to 6 carbon atoms in the ring, aryl radicals, and the halo and cyano derivatives thereof; G represents a divalent carbocyclic aromatic radical; Q represents a radical of valence n selected from the group consisting of aliphatic and cycloaliphatic radicals containing up to 13 carbon atoms, and carbocyclic aromatic radicals; Y represents a member selected from the group consisting of CONH and COO; and, n is an integer equal to 2 or 3.

4,208,343

2,4 DIAMINO BENZONITRILE

Lawrence W. Frost, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 85,771, Oct. 30, 1970, Pat. No. 3,836,506.
This application Dec. 20, 1973, Ser. No. 427,008
Int. Cl.[2] C07C *121/52, 121/78*
U.S. Cl. 260—465 E 1 Claim

1. 2,4 diaminobenzonitrile.

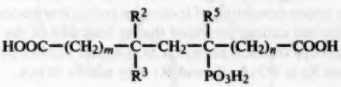
4,208,344

PHOSPHONOADIPIC ACID ADDITIVES TO AQUEOUS SYSTEMS

John G. Dingwall, Sale; Barry Cook, Manchester, and Alan Marshall, Macclesfield, all of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 862,795, Dec. 21, 1977, abandoned.
This application Feb. 26, 1979, Ser. No. 15,016
Claims priority, application United Kingdom, Dec. 24, 1976, 54106/76
Int. Cl.[2] C07F *9/38;* C02B *5/06*
U.S. Cl. 260—502.4 R 7 Claims

1. A compound or mixture of compounds of the general formula



in which m and n may be 0 or 1, but both cannot be 1, and R^2, R^3 and R^5 are independently hydrogen or methyl; or the water-soluble inorganic or organic salts thereof; with the proviso that at least one of R^2, R^3 and R^5 must be methyl, and when m and n are both 0, all of R^2, R^3 and R^5 are methyl.

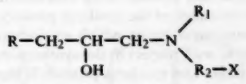
4,208,345

2-HYDROXY-N-PROPYLAMINE DERIVATIVES USEFUL AS SURFACE ACTIVE AGENTS

Werner Amati, Hersberg, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Feb. 27, 1978, Ser. No. 881,958
Claims priority, application Switzerland, Mar. 1, 1977, 2553/77
Int. Cl.[2] C07C *143/54, 143/64, 63/50*
U.S. Cl. 260—507 R 13 Claims

1. A compound or mixture of compounds of the formula,



in which

R is a mono- or dialkylphenolpoly(C_{2-3})-alkyleneglycolether group bound through an oxygen atom;

R_1 is hydrogen; unsubstituted alkyl; alkyl monosubstituted by hydroxy; alkyl monosubstituted by sulfo; alkyl monosubstituted by carboxy; alkyl monosubstituted by hydroxy

and monosubstituted by sulfo; or alkyl monosubstituted by hydroxy and monosubstituted by carboxy;

R_2 is unsubstituted alkylene or alkylene monosubstituted by hydroxy; and

X is sulfo or carboxy,

with the provisos that R contains at least 8 (C_{2-3}) alkyleneoxy units and that an average of at least 50% of the alkyleneoxy units in R are ethyleneoxy, each sulfo and carboxy group of said compound or mixture of compounds being in free acid or salt form.

4,208,346

S-PHENENYLTRIS(SULFONYLIMINO)TRI-BENZENE MONO-AND DI-SULFONIC ACIDS AND SALTS

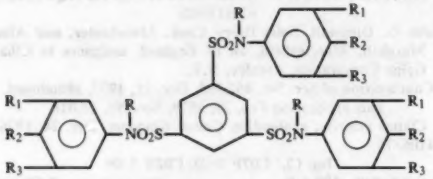
Ransom B. Conrow, Pearlriver, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 26, 1978, Ser. No. 973,313

Int. Cl.[2] **C07C** *143/58;* **A61K** *31/185*

U.S. Cl. 260—510 **3 Claims**

1. A compound of the formula:



wherein each R is selected from the group consisting of hydrogen and alkali metal; each R_1, R_2 and R_3 is selected from the group consisting of hydrogen and SO_3A, wherein A is selected from the group consisting of hydrogen and a pharmaceutically acceptable salt cation; provided that at least one of the R_1, R_2 and R_3 groups on each phenyl is SO_3A; and further provided that when R_2 is SO_3A, R_1 and R_3 may not be SO_3A.

4,208,347

PROCESS FOR THE SYNTHESIS OF UREA

Giorgio Pagani, Milan, Italy, assignor to Montedison S.p.A., Milan, Italy

Filed May 1, 1978, Ser. No. 901,816

Claims priority, application Italy, May 5, 1977, 23213 A/77; May 5, 1977, 23214 A/77; May 18, 1977, 23710 A/77; May 18, 1977, 23711 A/77

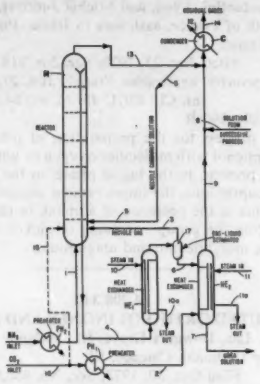
Int. Cl.[2] **C07C** *126/02*

U.S. Cl. 260—555 A **15 Claims**

1. An improved isobaric double-recycle process for synthesizing urea with the formation of ammonium carbamate as an intermediate, comprising effecting reaction between ammonia and carbon dioxide at high NH_3:CO_2 molar ratios, a heat-treatment of the synthesis product at substantially the same pressure as that of the synthesis step and in the presence of a stripping gas, and two distinct isobaric recycles of the residual substances and of the substances in excess released from said synthesis product, said process being characterized in that:

(a) said heat-treatment of the synthesis product is carried out in two consecutive stages which are isobaric or substantially isobaric with respect to the synthesis step, in the first of which stages said synthesis product is heated, whereby substantially all the residual ammonium carbamate is decomposed and the decomposition products are displaced together with part of the excess NH_3, while in the second stage the remaining part of the NH_3 excess is displaced by supplying supplemental heat and by injecting thereto a CO_2 stream; and

(b) the gas phase stripped in the first stage is immediately recycled to the synthesis step and the gas phase stripped in the second stage is subjected to a condensation and to a



residual gas purge and then recycled, in the liquid state, to the synthesis step.

4,208,348

QUATERNARY AMMONIUM SALT CATALYZED PREPARATION OF SULFONAMIDES

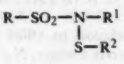
David C. K. Chan, San Francisco, and Arthur A. Whipp, Walnut Creek, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 760,042, Jan. 17, 1977, Pat. No. 4,107,332. This application Jun. 2, 1978, Ser. No. 912,166

Int. Cl.[2] **C07C** *143/72, 143/84*

U.S. Cl. 260—556 A **1 Claim**

1. The method of preparing a compound of the formula:



wherein one R or R^1 group is cycloalkyl of 5 to 8 carbon atoms substituted with up to 2 alkyl of 1 to 4 atoms or alkenyl of 3 to 6 carbon atoms and the other R or R^1 group is alkyl of 1 to 6 carbon atoms or alkenyl of 3 to 6 carbon atoms and R^2 is tetrachloroethyl which comprises reacting a sulfonamide of the formula $R—SO_2—NH—R^1$ with a substantially equimolar amount of a tetrachloroethylsulfenyl chloride in the presence of an acid acceptor and a catalytic amount of a quaternary ammonium salt.

4,208,349

PROCESS FOR THE PREPARATION OF 2-[N-(2-HYDROXYETHYL)-N-LOWER ALKYLAMINOMETHYL]BENZHYDROLS

Peter G. Watson, Loughborough, England, assignor to Riker Laboratories, Inc., Northridge, Calif.

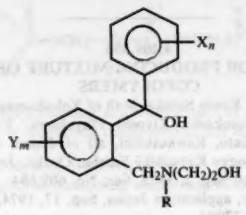
Continuation of Ser. No. 928,600, Jul. 27, 1978. This application Mar. 5, 1979, Ser. No. 17,589

Int. Cl.[2] **C07C** *85/12*

U.S. Cl. 260—570 R **11 Claims**

1. A process for the preparation of 2-[N-(2-hydroxyethyl)-N-lower alkylaminomethyl]benzhydrols of the formula

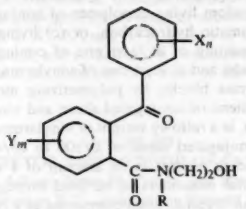
I



wherein R is methyl or ethyl, X is fluorine, chlorine, bromine or methyl, Y is fluorine, chlorine, methyl or methoxy, and m and n are independently zero, one or two which comprises

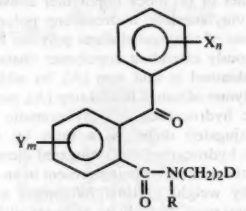
(1) treating a compound of the formula

II



with at least an equimolar amount of a halogenating agent in an inert solvent, to provide a product of the formula

III



where D is halogen and

(2) reducing that product in an inert solvent with sodium borohydride in the presence of an alkanoic acid.

4,208,350

SEPARATING PHENOLS FROM ALKALINE PULPING SPENT LIQUORS

William M. Hearon, Portland, Oreg., and Cheng F. Lo, Vancouver, Wash., assignors to Boise Cascade Corporation, Boise, Id.

Filed Mar. 6, 1978, Ser. No. 883,413

Int. Cl.[2] C07C *37/36, 45/24, 41/12, 37/38*

U.S. Cl. 568—324 **14 Claims**

1. The process for the manufacture of phenols which comprises:

(a) pulping lignocellulose by an alkaline pulping process to produce a cellulosic pulp product and an alkaline spent liquor containing a mixture of phenols as their alkali metal salts, the said phenols comprising phenol, cresol, xylenol, guaiacol, acetovanillone and vanillin,

(b) separating the spent liquor from the pulp,

(c) concentrating the spent liquor to a solids content of up to about 50% by weight,

(d) extracting the concentrated spent liquor with a solvent comprising essentially a lower aliphatic alcohol having from 2–5 carbon atoms inclusive, at a temperature of from just above the freezing temperature to about the boiling temperature of the solvent, thereby forming a solvent phase containing the alkali metal salts of the phenols, and an aqueous phase,

(e) separating the solvent phase from the aqueous phase,

(f) concentrating the separated solvent phase by the removal of solvent therefrom,

(g) acidifying, with an acid of the group consisting of sulfuric acid, phosphoric acid and acetic acid, the resulting concentrated solvent phase to convert the alkali metal salts of the phenols contained therein to free phenols,

(h) solvent extracting the acidified and concentrated solvent phase with a substantially water immiscible selective solvent for free phenols,

(i) separating the resulting free phenols solvent extract, and

(j) fractionally distilling the free phenols solvent extract for separation of the phenols contained therein.

4,208,351

STEREOSELECTIVE PREPARATION OF HEXAHYDRO DIBENZOPYRANONES AND INTERMEDIATES THEREFOR

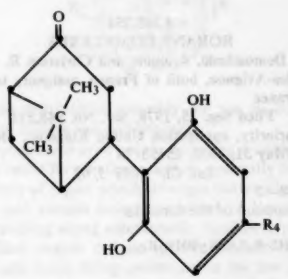
Robert A. Archer, and William A. Day, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 898,610, Apr. 21, 1978, which is a division of Ser. No. 740,502, Nov. 10, 1976, Pat. No. 4,102,902. This application Apr. 17, 1979, Ser. No. 30,783

Int. Cl.[2] C07C *49/82*

U.S. Cl. 568—327 **5 Claims**

1. A compound of the formula



wherein: R_4 is C_5–C_{10} alkyl, C_5–C_{10} alkenyl, C_5–C_8 cycloalkyl and C_5–C_8 cycloalkenyl.

4,208,352

OXIDATION PROCESS FOR ALKYLAROMATICS

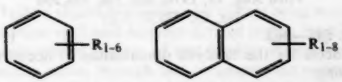
Lloyd E. Gardner, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 15, 1975, Ser. No. 640,591

Int. Cl.[2] C07C *45/02*

U.S. Cl. 568—431 **4 Claims**

1. A process for converting alkyl-substituted aromatic compounds to oxygenated products, said process comprising contacting alkyl-substituted aromatic compounds chosen from those corresponding to the generic formulas:



wherein each R is selected from hydrogen, halogen atoms or branched or unbranched alkyl groups having from 1 to about 6 carbon atoms, at least one R being an alkyl group free of quaternary carbon atoms, in the liquid phase at a temperature in the range of about 50° C. to about 200° C. with molecular

oxygen in the presence of (1) a catalyst system consisting essentially of a copper compound and a bromine compound, said catalyst system being substantially insoluble in the reaction mixture at reaction conditions, (2) an inorganic nitrate compound present in an amount up to about 200 millimoles per mole of alkyl-substituted feedstock and (3) a compound chosen from the group consisting of acetic anhydride and acetic acid which is present in an amount of up to about 100 millimoles per mole of alkyl-substituted feedstock.

4,208,353

PRODUCTION OF FORMALDEHYDE

Dennis E. Webster, and Ian M. Rouse, both of Royston, England, assignors to Johnson, Matthey & Co., Limited, London, England

Filed Apr. 12, 1978, Ser. No. 895,812

Claims priority, application United Kingdom, Apr. 15, 1977, 15761/77

Int. Cl.[2] C07C *45/16*

U.S. Cl. 568—472 **5 Claims**

1. A process for the production of formaldehyde from methanol by oxidative dehydrogenation which comprises passing gaseous methanol and oxygen at an elevated temperature in the range of 500° C.–700° C., a pressure of 0.5 to 2.0 atmospheres and a space velocity in the range of 5000 to 100,000 hr^{-1} through a catalyst comprising a monolithic metal or ceramic support provided with channels for passage therethrough of the gas stream, the channel wall surfaces being coated or impregnated with one or more elements selected from the group consisting of copper, silver, gold and iron.

4,208,354

BORANE COMPLEXES

Claude G. Demosthene, Aramon, and Christian R. Aspisi, Villeneuve-les-Avignon, both of France, assignors to Expansia, Paris, France

Filed Sep. 25, 1978, Ser. No. 945,511

Claims priority, application United Kingdom, Oct. 1, 1977, 40862/77; May 31, 1978, 25653/78

Int. Cl.[2] C07F *5/02*

U.S. Cl. 568—3 **1 Claim**

1. A compound of the formula:

$$R_4R_3HB{:}R_1SASR_2{:}BHR_3R_4$$

wherein:

A stands for a straight, branched or cyclic hydrocarbon chain containing from up to 9 carbon atoms,

R_1 and R_2 stand each for a straight or branched alkyl rest containing up to 5 carbon atoms in the longest chain, or benzyl radicals optionally substituted by one or more lower alkyl containing up to 5 carbon atoms or a halogen, and

R_3 and R_4 stand for a hydrogen atom, a lower alkyl up to C_6 or a mono or bicycloalkyl group.

4,208,355

DIMERIZATION OF NORBORNADIENE TO BINOR-S WITH A HOMOGENEOUS CATALYST

Harry K. Myers, Jr., Aston, and Abraham Schneider, Overbrook Hills, both of Pa., assignors to Suntech, Inc., St. Davids, Pa.

Filed Aug. 13, 1976, Ser. No. 714,204

Int. Cl.[2] C07C *3/21*

U.S. Cl. 585—362 **12 Claims**

1. Process for the catalytic dimerization of norbornadiene comprising:

reacting a feed consisting essentially of norbornadiene in the presence of a catalytic amount of a three-component catalytic system of cobaltic acetylacetonate and triphenyl phosphine and diethylaluminum chloride or ethylaluminum chloride or aluminum ethylsesquichloride and at a temperature between from about 0° C. to about 150° C. thereby dimerizing a majority of the norbornadiene to Binor-S.

4,208,356

PROCESS FOR PRODUCING MIXTURE OF BLOCK COPOLYMERS

Isaburo Fukawa; Kunio Satake, both of Yokohamashi; Tsuyoshi Yamada, Yokosukashi; Kiyoshi Hayakawa, Yokohamashi, and Yasushi Sato, Kawasakishi, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 2, 1975, Ser. No. 609,684

Claims priority, application Japan, Sep. 17, 1974, 49-105970; Mar. 7, 1975, 50-27064

Int. Cl.[2] C08F *297/04*

U.S. Cl. 525—89 **5 Claims**

1. A process for producing a block copolymer mixture of conjugated diene and vinylaromatic hydrocarbon which comprises two steps of

a first step (A) of preparing (a) living polymer of conjugated diene, (b) random living copolymer of conjugated diene and vinylaromatic hydrocarbon, or (c) living block copolymer consisting of at least one of conjugated diene polymer blocks and at least one of vinylaromatic hydrocarbon polymer blocks, by polymerizing monomers of conjugated diene or conjugated diene and vinylaromatic hydrocarbon, in a ratio by weight of vinylaromatic hydrocarbon to conjugated diene of 0/100 to 60/40 and the monomers being present in an amount of 1 to 80% by weight of total monomers to be used through the two steps, using an organolithium compound as a catalyst and a solvent consisting mainly of aliphatic hydrocarbon the polymers not being inactivated with an inactivating agent, and

a second step (B) of (1) preparing (d) vinylaromatic hydrocarbon polymer or (e) block copolymer consisting of at least one of vinylaromatic hydrocarbon polymer blocks and at least one of conjugated diene polymer blocks, and (2) simultaneously extending copolymer chains or polymer chains obtained in said step (A), by adding to the living (co)polymer obtained in said step (A), monomers of vinylaromatic hydrocarbon or vinylaromatic hydrocarbon and conjugated diene, in a ratio by weight of vinylaromatic hydrocarbon to conjugated diene of 100/0 to 65/35 and the monomers being present in an amount of 99 to 20% by weight of total monomers to be used through the two steps, and adding an organolithium compound as a catalyst and a solvent consisting mainly of an aliphatic hydrocarbon, and polymerizing the monomer(s) to simultaneously obtain polymers (d) or (e) and the polymers by extending the chains of polymers of step (A), thereby obtaining a resulting block copolymer mixture,

said block copolymer mixture having a ratio of vinylaromatic hydrocarbon content of the ultimate block copolymers obtained by combining the monomer(s) added in said step (B), with the living polymer chains formed in said step (A) to vinylaromatic hydrocarbon content of the (co)polymers obtained only in said step (B), of at least 1/1.8, and a ratio of vinylaromatic hydrocarbon portion to conjugated diene portion in said resulting block copolymer mixture, of 60/40 to 95/5.

4,208,357

PROCESS FOR PREPARING PHOSPHORUS AND SULFUR CONTAINING AMIDES AND THIOAMIDES

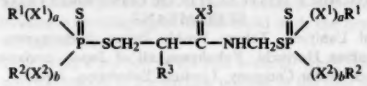
Donald I. Hoke, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Division of Ser. No. 759,614, Jan. 17, 1977, which is a continuation-in-part of Ser. No. 503,892, Sep. 6, 1974, Pat. No. 4,032,461. This application Sep. 13, 1978, Ser. No. 942,096

Int. Cl.[2] C07F *9/165, 9/38, 9/30*

U.S. Cl. 260—978 **9 Claims**

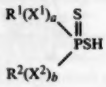
1. A method of preparing a compound having the formula:



which comprises reacting at a temperature of about 0° to 100° C. an amide or thioamide compound of the formula

$$CH_2{=}C(R^3)C(X^3)NHCH_2OH$$

with a phosphorus-containing compound of the formula:



wherein each of R^1 and R^2 is a hydrocarbon-based radical; R^3 is a hydrogen, halogen, lower alkyl or substituted lower alkyl radical; each of X^1, X^2, and X^3 is oxygen or sulfur; and a and b are each 0 or 1; and at least about two moles of the phosphorus compound are used per one mole of the amide or thioamide.

4,208,358

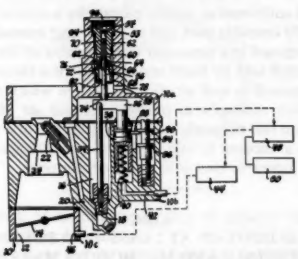
CARBURETOR AND METHOD OF CALIBRATION

Terrance J. Atkins; James D. Cronin, and Robert L. Hogeman, all of Rochester, N.Y., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 868,712, Jan. 11, 1978, abandoned, which is a continuation-in-part of Ser. No. 801,061, May 27, 1977, abandoned. This application Jul. 3, 1978, Ser. No. 921,164

Int. Cl.² F02M *7/18*

U.S. Cl. 261—50 R **4 Claims**



1. A carburetor comprising a fuel bowl section including main and idle fuel passages, a metering orifice in said main fuel passage, a metering apparatus vertically reciprocable between a rich position and a lean position, said apparatus including a bracket and a metering element operated by said bracket to restrict fuel flow through said orifice in said lean position and to permit increased fuel flow through said orifice in said rich position, an air horn section including an air bleed having a metering area above said bracket and opening into said idle fuel passage, said metering apparatus further including a bleed valve operated by said bracket to restrict air flow through said area and thereby permit increased fuel flow through said idle fuel passage in said rich position and to permit increased air flow through said area and thereby restrict fuel flow through said idle fuel passage in said lean position, said bleed valve having a tail which floats on and is biased into engagement with said bracket for operating said bleed valve whereby said metering orifice in said fuel bowl section need not be precisely aligned with said metering area in said air horn section to allow a common actuating member to operate both said metering element and said bleed valve, and said apparatus also including an actuating member for moving said apparatus between said rich position and said lean position to thereby effect control of fuel flow through both said main fuel passage and said idle fuel passage.

4,208,359

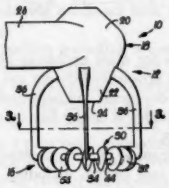
LOW HEAD NON-CLOGGING WATER DISTRIBUTION NOZZLE FOR COOLING TOWERS

Thomas W. Bugler, III, Prairie Village, Kans., and Gerald D. Fritz, Raytown, Mo., assignors to The Marley Company, Mission, Kans.

Filed Jan. 29, 1979, Ser. No. 7,381

Int. Cl.² B01F *3/04*

U.S. Cl. 261—111 **13 Claims**



1. A liquid distribution assembly for use in counterflow liquid cooling towers and comprising:

a hollow-cone swirl-type nozzle including a liquid inlet and a liquid outlet for creating a hollow, generally frusto-conical curtain of liquid which diverges outwardly from said outlet, said curtain being comprised of liquid particles each traveling along substantially rectilinear paths, with the hollow region defined by said curtain immediately below said outlet being unobstructed for free passage of foreign objects therethrough and relatively free of liquid flow therethrough; and

structure for dispersing said curtain of liquid, including:

a plurality of stationary liquid-dispersing members each presenting a liquid-contacting surface; and

means mounting said members below said outlet, in horizontally spaced relationship to one another presenting an annular ring and in disposition such that a substantial number of said liquid particles contact said liquid-contacting surfaces,

there being an open, unobstructed region below said nozzle outlet and cooperatively circumscribed by said members which has an area greater than the area of said nozzle outlet, both of said areas being measured transversely of the longitudinal axis of said frustoconical curtain,

the hollow region defined by said curtain being in communication with said member-defined region for allowing unobstructed passage of said foreign objects from said nozzle outlet, through said communicated regions, and away from said assembly without substantial interference with the latter,

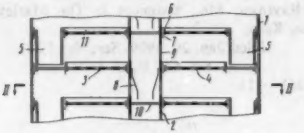
each of said liquid-contacting surfaces being configured such that the paths of travel of the liquid particles contacting a respective surface are disposed angularly relative thereto.

4,208,360

MASS EXCHANGE APPARATUS

Viktor P. Belyakov, prospekt Lenina, 5/1, kv. 62; Vilgelm F. Gustov, ulitsa Tereshkovoi, 5, kv. 30, both of Balashikha Moskovskoi oblasti; Khaim Y. Step, ulitsa Chelyabinskaya, 24, korpus 1, kv. 85, Moscow; Vadim A. Garin, shosse Entuziastov, 11, kv. 58, Balashikha Moskovskoi oblasti; Valentin K. Orlov, ulitsa Sovetskaya, 21, kv. 61, Balashikha Moskovskoi oblasti; Viktor S. Kortikov, ulitsa Bykovskogo, 2, kv. 63, Balashikha Moskovskoi oblasti; Nina A. Prokofieva, ulitsa Juliusa Fuchika, 2/6, kv. 8, Balashikha Moskovskoi oblasti; Anna E. Terushkina, ulitsa Tereshkovoi, 13, kv. 35, Balashikha Moskovskoi oblasti, and Ljudmila B. Vinogradova, ulitsa Tereshkovoi, 13, kv. 66, Balashikha Moskovskoi oblasti, all of U.S.S.R.

Filed Dec. 26, 1978, Ser. No. 972,787
Int. Cl.[2] B01F *3/04*
U.S. Cl. 261—114 R 3 Claims



1. An apparatus for mass exchange between downwardly flowing liquid and upwardly flowing gas or vapor, and being suitable for use at cryogenic temperatures; comprising

(a) a vertical cylindrical casing having upper and lower end cover closures;

(b) upper port means to provide communication through the upper end of said casing, including a liquid inlet and a vapor outlet mounted on the upper end of said casing, said liquid inlet operable to discharge liquid into the upper end of said casing and said vapor outlet operable to exhaust gaseous materials from the upper end of said casing;

(c) lower port means to provide communication through the lower end of said casing, including a liquid outlet and a vapor inlet mounted on the lower end of said casing, said liquid outlet being operable to exhaust liquids from the bottom of said casing, said vapor inlet being operable to discharge gaseous material into the bottom of said casing;

(d) a central conduit box mounted in said casing along the axis of said casing, said central box being substantially the same height as said casing and having a width substantially equal to the diameter of the said casing;

(e) contact perforated plates arranged along the height of and secured to said central box, each contact plate having two identical segments secured to the central box;

(f) said central box having horizontal rows of perforations in the walls disposed between the contact plates, to provide communication between the interior of said central box and the space between adjacent of said contact plates;

alternate ones of said plates being the upper plate of associated pairs of plates and the plates immediately below said upper plates being the lower plate of each said pair of plates;

(g) a peripheral overflow device communicating the space over each upper plate segement with the surface of the immediately lower segment of said lower plates;

(h) horizontal baffles mounted in said central box at a level substantially adjacent each said upper plate to restrain fluid flow through said central box thereby to cause the flow of liquid to be redirected through said perforations and onto said upper plates;

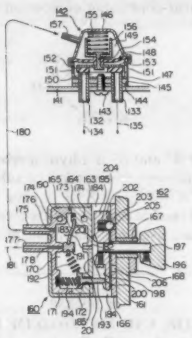
(i) central overflow devices mounted in said central box and providing communication between adjacent pairs of said plates and extending from said perforations over each said lower plate, passed the perforations over the next lower upper plate; and substantially to the baffle adjacent to the next lower upper plate.

4,208,361

AUTOMOBILE WITH ALTITUDE COMPENSATED FUEL FEED MEANS

Takashi Ushijima, Tokyo; Yoshio Iwasa, Nagareyama, and Tomofusa Horiuchi, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 11, 1977, Ser. No. 786,429
Claims priority, application Japan, Apr. 15, 1976, 51/43270; Jul. 22, 1976, 51/87570
Int. Cl.[2] F02M *7/24*
U.S. Cl. 261—121 B 5 Claims



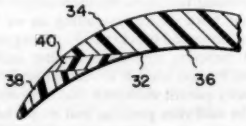
1. An automobile provided with a fuel feed means having at least one air induction passage leading from an air cleaner and at least one fuel feed circuit means for supplying fuel into the air induction passage, the fuel feed circuit having an air bleed means, the fuel feed means comprising at least one additional air supply passage leading to the fuel feed circuit means and an air bleed control valve for closing the additional air supply passage, in which said air bleed control valve is actuated to open said additional air supply passage by a control unit having a manually operable part; and in which said manually operable part is disposed in a passenger compartment of the automobile and in which said air bleed control valve is a vacuum actuated valve disposed in said air cleaner, and in which said control unit applies atmospheric pressure to said air bleed control valve when said manually operable part is in a first position and it applies a vacuum to said air bleed control valve when said manually operable part is in a second position.

4,208,362

SHAPED BODY OF AT LEAST TWO POLYMERIZED MATERIALS AND METHOD TO MAKE SAME

William G. Deichert, Webster; Joseph J. Falcetta, Pittsford, and Kai C. Su, Webster, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation-in-part of Ser. No. 569,721, Apr. 21, 1975, abandoned. This application Mar. 22, 1976, Ser. No. 667,833
Int. Cl.[2] B29D *11/00*
U.S. Cl. 264—1 10 Claims



8. A method of manufacturing a shaped body for eventual use in a contact lens comprising at least two polymerized materials, comprising:

providing a first polymerizable material in a mold, said material being capable of forming a relatively soft swell-

able polymerized material, a portion of said material forming a surface portion that is free of contact with the mold;

providing a swelling agent in the mold with the first polymerizable material;

polymerizing a portion of the first material while inhibiting polymerization of the surface portion of the first material to obtain polymerized and unpolymerized portions of the first material;

removing the means of inhibiting polymerization of the surface portion of the first material;

adding a second polymerizable material to the mold, said second material contacting the surface of the first material, said second material being relatively hard when polymerized; and

polymerizing the unpolymerized portion of the first material and the second material to obtain a shaped body having a section of the first polymerized material, a transition section of a substantially random copolymer of the first and second materials, and a section of the second polymerized material.

4,208,363

METHOD OF MAKING A PLURALITY OF ADJACENT LIGHT PIPE ELEMENTS

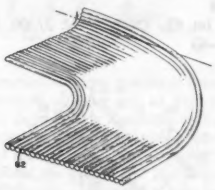
George J. Yevick, Leonia, N.J., assignor to Izon Corporation, Stamford, Conn.

Continuation of Ser. No. 472,483, May 22, 1974, abandoned, which is a division of Ser. No. 309,968, Nov. 28, 1972, Pat. No. 3,864,034. This application Sep. 13, 1976, Ser. No. 719,008

The portion of the term of this patent subsequent to Jan. 17, 1994, has been disclaimed.

Int. Cl.[2] B29D *11/00*; G02B *5/16*

U.S. Cl. 264—1 **2 Claims**



1. A method of making a plurality of adjacent light pipe elements, including the steps of,

(a) die deforming the top and bottom surfaces of a sheet of transparent, bendable, plastic material, in the general form of a flat elbow, said elbow having a forward end and a rearmost end,

(b) said die deformation producing a plurality of side-by-side light conducting elements joined at their mid-sections longitudinally therealong, said light conducting elements being parallel to the sides of the flat elbow,

(c) wrapping the rearmost end of the flat elbow sheet about an axis normal to its end and located adjacent one edge of the flat elbow sheet,

(d) whereby the wrapped, rearmost end of the sheet defines light pipes in the form of a solid spiral roll and whereby the remaining end, the forward end, of the flat sheet defines a plurality of side-by-side light pipe termini,

(e) the additional step of cutting the forward end to form a plurality of sawtooth sets of light pipe termini, these termini being in a regular array and spaced apart from each other, whereby the spaced apart termini, when light is passed into the solid spiral roll, supply light to illuminate microimages on a microfiche.

4,208,364

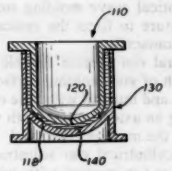
PROCESS FOR THE PRODUCTION OF CONTACT LENSES

Thomas H. Shepherd, 12 N. Greenwood Ave., Hopewell, N.J. 08525

Division of Ser. No. 670,031, Mar. 24, 1976, Pat. No. 4,121,896. This application Jun. 12, 1978, Ser. No. 914,421

Int. Cl.[2] B29D *11/00*

U.S. Cl. 264—1 **17 Claims**



1. A process of producing contact lenses which comprises the steps of:

(a) charging a mixture comprising vulcanizable or polymerizable constituents to a first mold portion of a thermoplastic mold for producing a contact lens, said thermoplastic mold comprising:

(i) a first mold portion including a first molding surface having a principal longitudinal axis, said first molding surface having a predetermined curvature to form a first surface of the desired contact lens;

(ii) a second mold portion including a second molding surface having a principal longitudinal axis, said second molding surface having a predetermined curvature to form a second surface of the desired contact lens; and

(iii) a flexible rim portion being attached circumferentially to, and integral with, one of said molding surfaces of one of said mold portions and having an axis common with the principal longitudinal axis of the mold portion to which it is attached;

(b) closing the mold by placing the first mold portion and the second mold portion in alignment with each other such that the principal longitudinal axes of the mold portions coincide with each other and in a manner whereby the flexible rim portion is seated circumferentially on the opposite molding surface while retaining said mixture between said molding surfaces and said flexible rim portion to form a totally enclosed space; and

(c) subjecting the resulting closed mold system to activating conditions for a period of time sufficient to effect the desired degree of vulcanization or polymerization of said mixture while causing the flexible rim portion to flex in a uniform manner with respect to the axis of said molding surface such that said mold portions approach each other during vulcanization or polymerization and;

(d) recovering the resulting product having the shape of a contact lens.

4,208,365

METHOD AND APPARATUS FOR MOLDING TORIC CONTACT LENSES

Robert J. LeFevre, Bethlehem, Pa., assignor to National Patent Development Corporation, New York, N.Y.

Filed Dec. 20, 1978, Ser. No. 971,241

Int. Cl.[2] B29D *11/00*

U.S. Cl. 264—1 **35 Claims**

25. A process for casting a contact lens having a toric-shaped optical curve surface from a polymerizable mixture in a closed mold system which includes:

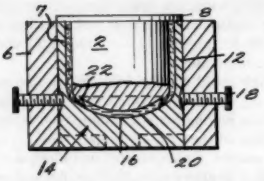
(i) a male mold portion including a substantially cylindrical support having a principal longitudinal axis and a base curve molding surface attached circumferentially to said cylindrical support, said base curve molding surface hav-

ing a predetermined curvature to form the base curve surface of the resulting contact lens;

(ii) a flexible, thermoplastic female portion comprising a hollow cylindrical portion having principal longitudinal axis and having an open upper end and a closed lower end, the internal diameter of said female cylindrical portion being sufficiently greater than the external diameter of said male support portion to permit frictionless insertion of the male portion thereto, the female portion being circumferentially closed at the lower end thereof by an integral optical curve molding surface having an adjustable curvature to form the optical curve surface of the resulting contact lens;

(iii) an integral rim portion flexible inwardly towards the axis of both of said molding surfaces attached circumferentially to, and integral with, one of said molding surfaces and having an axis common with the principal longitudinal axis of the mold portion; and

(iv) a rigid cylindrical rim adjustment means operatively associated and in contact with said flexible female mold portion at about the horizontal plane of said optical mold



surface, said ring provided with a pair of adjustable set screws which engage said female mold for flexing said female mold portion and in turn said integral optical curve surface into a toric configuration;

said process including the sequential steps of:

A. adjusting said set screws and, in turn, said optical curve molding surface into the desired toric configuration;

B. charging a polymerizable mixture comprising hydrophilic monomer into the female portion of said mold;

C. closing the mold by slidably engaging the cylindrical portion of the female portion and seating said flexible rim circumferentially on the opposite molding surface while retaining said mixture between said molding surfaces and said flexible rim portion to form a totally enclosed space;

D. subjecting the closed mold to polymerization conditions causing said polymerizable material to contract during polymerization, urging said molding surfaces towards each other and causing said rim portion to flex inwardly in a uniform manner during such contraction; and

E. removing the thus molded contact lens from the mold.

4,208,366

PROCESS FOR PREPARING A NONWOVEN WEB

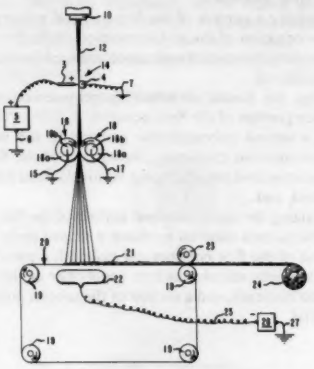
George A. Kinney, West Chester, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 31, 1978, Ser. No. 956,348

Int. Cl.[2] **B06B** *1/02;* **B29D** *3/00*

U.S. Cl. 264—24 **1 Claim**

1. In a process for preparing a uniform nonwoven web that includes the steps of forwarding a continuous bundle of untwisted filaments through an electrostatic charging zone to deposit a charge on the filaments and collecting the filaments as a web on a moving collecting surface, the improvement comprising: passing the charged filaments into the nip between two contiguous elastomer covered electrically grounded counter rotating rolls located between the charging zone and the collecting surface; generating an electrostatic field between said rolls and said collecting surface, said electrostatic field having a polarity oriented to repel the charged filaments from



the surface of said rolls facing said collecting surface and to move the charged filaments toward the collecting surface; and propelling the charged filaments into said electrostatic field by means of said rolls.

4,208,367

PROCESS AND APPARATUS FOR MAKING ROD-SHAPED BODIES FROM SINTERABLE GRANULAR MATERIAL

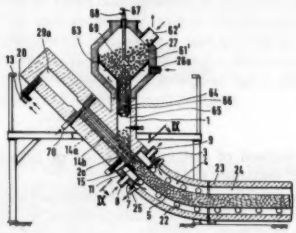
Joachim Wünning, Bergstrasse 20, 7251 Warmbronn, Fed. Rep. of Germany

Filed Aug. 17, 1976, Ser. No. 715,120

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1975, 2537508

Int. Cl.[2] **C04B** *33/32, 21/00, 35/64*

U.S. Cl. 264—43 **29 Claims**



1. A process for producing rod-shaped bodies of cellular structure from a sinterable granular ceramic material by passing said granular material through a mold while supplying heat thereto evenly to bring said granular material to a sintering temperature before it leaves the mold, comprising substantially concurrent performance of the steps of:

causing a mass of particles of said granular material to move in an even flow through a fixed tubular extrusion mold defining the cross-section of a desired rod-shaped body to be formed;

uniformly heating said mass of particles to the sintering temperature of the material within said mold by causing said mass to pass through a combustion zone within said extrusion mold, and which zone is defined by combustion of a fuel within the aggregation of granular material where the granular material is being compacted, said fuel being fed through said granular material in the average

direction corresponding to the direction of the movement of said granular material

pulling endwise out of said extrusion mold a body of cellular sintered-together material formed by said granular material in said combustion zone, the granular material being continuously sintered onto the end of said body as it is correspondingly pulled out of said form.

4,208,368

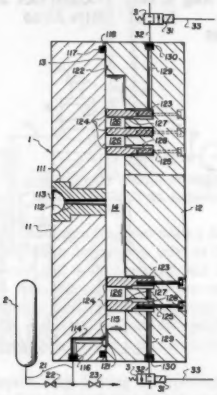
METHOD AND APPARATUS FOR INJECTION MOLDING FOAMED PLASTIC ARTICLES USING A PRE-PRESSURIZED MOLD HAVING FIXED CORE MEMBERS WITH CONTROLLED VENTING

Ernst Egli, Bischofszell, Switzerland, assignor to Gebrüder Buhler AG, Switzerland

Filed Jul. 18, 1978, Ser. No. 925,959

Int. Cl.[2] B29D *27/00*

U.S. Cl. 264—45.5 **18 Claims**



1. A method of injection molding articles of foamable plastic material having a smooth surface and an expanded cellular core, using a closable mold having a sealable mold cavity with a gas therein and at least one fixed mold core extending into the mold cavity, with at least one intermediate shadow space of the mold cavity adjacent the mold core, comprising: injecting a melt of the plastic material containing a foaming agent into the cavity against the counter-pressure of the gas which is provided to prevent expansion of the melt during the mold filling operation, the flow front of the melt spreading out in all directions within the cavity and thereby the gas being progressively displaced while the melt flows around the mold core and tends to form inclusions of pressurized gas in the intermediate shadow space; venting the gas which is progressively displaced from the cavity as the melt flows around the core and forms the inclusion of pressurized gas in the intermediate shadow space adjacent the core; and separately venting each inclusion of pressurized gas adjacent each core immediately after it has been enclosed by the melt.

7. In an apparatus for molding foamed plastic articles having a smooth surface and a porous core, comprising a mold having a sealable mold cavity, a sprue connected into the mold cavity for injecting a plastic melt containing a foaming agent into the cavity, means for supplying a gas under pressure for the cavity with the plastic melt being injected against the counter-pressure of the gas to prevent expansion of the melt during the mold filling operation, means for discharging the gas progressively displaced by the melt as the mold cavity is filled, and at least one fixed mold core projecting into the cavity around which the melt flows and tends to form an inclusion of pressurized gas in a flow shadow space adjacent the core; an improvement comprising: venting means separate from the means for discharging the gas including a vent line extending from the shadow space of each core and out of the cavity; and valve control means connected to said vent line to open said vent line at a selected time during the mold filling operation when the gas inclusion is being formed to additionally relieve the gas inclusion in the flow shadow behind the core.

4,208,369

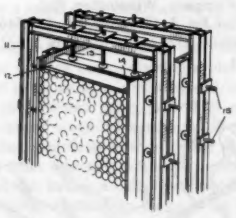
TECHNIQUE FOR CONVERTING BALSA LOGS INTO PANELS

Jean Kohn, New York, N.Y., assignor to Baltek Corporation, Northvale, N.J.

Continuation-in-part of Ser. No. 860,617, Dec. 14, 1977, Pat. No. 4,122,878. This application Apr. 6, 1978, Ser. No. 894,047

Int. Cl.[2] B29D *7/18*

U.S. Cl. 264—46.5 **9 Claims**



1. A technique for producing panels composed primarily of balsa wood comprising the steps of:

A. cutting balsa trees whose trunk or branch diameters are in a range of about 1½ to 4 inches into raw logs having a length of about 6 feet or greater;

B. peeling the bark from the raw logs to expose the underlying wood;

C. cutting the peeled logs into round pieces of like length;

D. kiln drying the pieces;

E. assembling the dried pieces into a dry stack constituted by multiple layers of kiln-dried pieces to form a temporary block of loose pieces;

F. individually wet coating the pieces of the temporary block with a cold setting adhesive and reassembling the pieces to form a wet stack which is then subjected to pressure in directions at right angles to each other for interlaminating the pieces in the wet stack to produce when the adhesive is cured an integrated stock block; and

G. dividing said block into panels.

4. A technique as set forth in claim **1**, wherein said integrated stock block has interstices therein defined by the interlaminated round pieces, said interstices being filled with a material having thermal properties comparable to balsa before said block is divided.

5. A technique as set forth in claim **4**, wherein said interstices are filled, in situ, with foam plastic material.

6. A technique as set forth in claim **5**, wherein said filling is effected in a mold which is closed about said block, after which foam is introduced in catalyzed form to fill said interstices.

4,208,370
PROCESS FOR AGGLOMERATING A SUBSTANCE FROM A LIQUID SYSTEM

Roland Häberli, Würenlingen; Hans Mollet, Reinach, and Christel Tempel, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 737,314, Nov. 1, 1976, abandoned. This application Apr. 3, 1978, Ser. No. 892,569

Claims priority, application Switzerland, Nov. 6, 1975, 14349/75

Int. Cl.² B01J 2/06

U.S. Cl. 264—117 23 Claims

1. In a process for agglomerating a solid substance from a liquid system, separating the agglomerated solid substance from said liquid system and drying the agglomerated substance, the improvement comprising:

(a) suspending the solid substance to be agglomerated in a first liquid not dissolving said substance,

(b) adding to the suspension an agglomerating amount of a second liquid which is completely miscible with the first liquid; said second liquid capable of dissolving said solid substance, and

(c) thoroughly stirring the mixture of said solid substance and first and second liquid until agglomerates of the solid substance are formed in the liquid system.

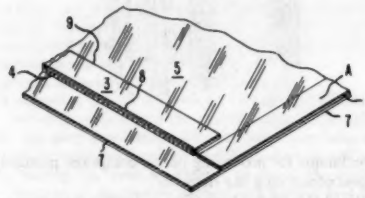
4,208,371
GASEOUS CONTAMINANT DOSIMETER WITH DIFFUSION DEVICE THEREFOR AND METHOD

Elbert V. Kring, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 7, 1978, Ser. No. 922,546

Int. Cl.² B01D 53/22, 59/10; G01N 31/22, 33/00

U.S. Cl. 422—61 20 Claims



1. A gas diffusion device to restrict the flow of a gaseous contaminant which comprises:

a plurality of parallel, potted, hollow fibers, said fibers being substantially non-hygroscopic, having an inside diameter of 15–500 microns a length of from 2.0 to 8.0 mm and being made of polypropylene, polyethylene, polyethylene terephthalate, or polymers or copolymers of tetrafluoroethylene and hexafluoropropylene; and

potting material which fills all the longitudinal spaces between said fibers,

wherein at least one of said fibers and said potting material is impermeable to said gaseous contaminant.

10. A dosimeter for the detection of a gaseous contaminant comprising:

a pouch-like receptacle of polymeric material having at least one compartment, said compartment occupying less than the total volume of said receptacle, leaving a reaction chamber, said compartment being adapted to contain a predetermined quantity of a testing reagent and said compartment being further adapted to release said reagent into said reaction chamber independently of any other reagents present in any other compartments, said reaction chamber being adapted to contain a collecting medium for said gaseous contaminant; and

a gas diffusion device, sealed into a boundary of said receptacle, which comprises a plurality of parallel, potted, hollow fibers, said hollow fibers being substantially non-hygroscopic and inert to said gaseous contaminant and having an inside diameter of 15–1000 microns, and potting material which fills all the longitudinal spaces between said hollow fibers wherein at least one of said hollow fibers and said potting material is impermeable to said gaseous contaminant, and wherein said hollow fibers provide the only communication between the atmosphere and the interior of said reaction chamber.

4,208,372
APPARATUS FOR GENERATING AND TRANSFERRING A GASEOUS TEST SAMPLE TO AN ATOMIC ABSORPTION SPECTROMETER

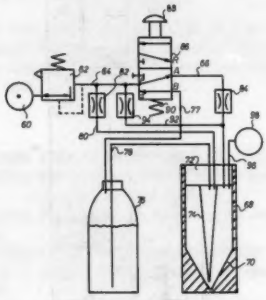
Bernhard W. Huber, Uberlingen, Fed. Rep. of Germany, assignor to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen, Fed. Rep. of Germany

Filed Apr. 14, 1978, Ser. No. 896,541

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1977, 2718381; Aug. 5, 1977, 2735281; Oct. 29, 1977, 2748685

Int. Cl.² G01N 27/66

U.S. Cl. 422—65 10 Claims



1. Apparatus for generating a gaseous test sample from a liquid sample and for transferring the test sample to a measuring cuvette of an atomic absorption spectrometer, comprising:

a sample vessel,

a closure plug for closing said sample vessel,

means defining a source for supplying inert gas under pressure,

means for adding a reagent to said sample vessel including a sealed reagent supply vessel, a reagent dispensing conduit having a first end located in said reagent supply vessel for withdrawing reagent from said reagent supply vessel and a second end terminating adjacent said plug in said sample supply vessel above the level of sample in the sample supply vessel, conduit means including a valve interconnecting the source of inert gas and said reagent supply vessel for supplying inert gas under pressure to said reagent supply vessel and displacing reagent from said reagent supply vessel through said dispensing conduit into said sample vessel, and a reagent flow conduit carried by said plug and disposed within said sample supply vessel in communication with said second end of said reagent dispensing conduit, said reagent flow conduit having an end terminating in an aperture adjacent the bottom of said sample vessel and below the level of sample therein whereby reagent may be transmitted from said second end along said flow conduit and outwardly through said aperture for bubbling upwardly within the sample supply vessel,

a gas inlet passage coupling said source of inert gas through said plug and the bore of said reagent flow conduit into said sample vessel, and

a gaseous sample outlet conduit connected to said closure

plug for transferring test sample under pressure from said sample vessel to the measuring cuvette.

4,208,373

REACTOR-TUBE ASSEMBLY FOR FLUID-WALL REACTORS FOR HIGH TEMPERATURE CHEMICAL REACTION PROCESSES

Edwin Matovich, Brea, Calif., assignor to Thagard Technology Company, Irvine, Calif.

Continuation-in-part of Ser. No. 271,560, Jul. 13, 1972, Pat. No. 3,933,434. This application Aug. 20, 1975, Ser. No. 606,246

Int. Cl.[2] B01J *1/00*

U.S. Cl. 422—129 **9 Claims**

1. A reactor-tube assembly for a high-temperature reactor in which substantially all of the heat is supplied by radiation coupling, including:

(a) a reactor tube having a first end with a first end opening passing therethrough defining an inlet to the reactor tube, having a second end with a second end opening passing therethrough defining an outlet to the reactor tube, and having an interior defining a passageway which extends between the first and the second end openings, the reactor tube being made of a porous fabric of a fibrous, refractory material;

(b) a first support ring having an opening passing therethrough, the first support ring being positioned adjacent the first end of the reactor tube with the opening of the support ring generally coaxial with the first end opening of the reactor tube so that the opening of the first support ring communicates with the interior of the tube through the first end opening;

(c) means for securing the first end of the reactor tube to the first support ring;

(d) a second support ring having an opening passing therethrough, the second support ring being positioned adjacent the second end of the reactor tube with the opening of the support ring generally coaxial with the second end opening of the reactor tube so that the opening of the second support ring communicates with the interior of the tube through the second end opening; and

(e) means for securing the second end of the reactor tube to the second support ring.

4,208,374

CATALYTIC CONVERTER

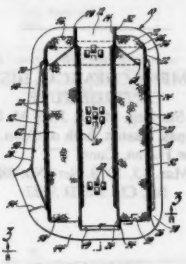
Michael R. Foster, Columbiaville, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 31, 1977, Ser. No. 847,406

Int. Cl.[2] B01J *8/02;* **F01N** *3/15, 7/18*

U.S. Cl. 422—179 **3 Claims**

1. A radial flow catalytic converter having a four-piece basic construction for use in a combustion engine exhaust system, said converter comprising a vertically disposed inner tube having an upper end for receiving exhaust gases, an outer tube coaxial with said inner tube and defining an annular space therebetween, said inner tube having its upper and lower ends projecting beyond the upper and lower ends of said outer tube, said inner and outer tubes having louvers formed therein permitting said exhaust gases to flow substantially radially outwardly through said annular space, a pair of inwardly concave shell members disposed on opposite sides of said tubes, said shell members having integral radially inwardly extending end portions cooperating to form cylindrical upper and lower neck regions respectively embracing the upper and lower ends of said inner tube while permitting substantially unrestricted lengthwise thermal expansion of the inner tube relative to the shell members and further cooperating to form cylindrical upper and lower shoulder regions respectively embracing the upper and lower ends of said outer tube while permitting substantially unrestricted lengthwise thermal expansion of the outer tube relative to the shell members to thereby retain said tubes and also close the upper and lower ends of said annular



space to form a radial flow catalyst bed in cooperation with both said tubes while allowing for differences in lengthwise thermal expansion between both of the tubes and the shell members, said catalyst bed containing a plurality of catalyst beads adapted to promote an oxidizing and/or reducing reaction within said exhaust gases, said shell members further having an enlarged waist intermediate said shoulder regions and surrounding said outer tube to define an outlet chamber between said outer tube and said shell members, each of said shell members also having a radially-outwardly-directed axially-extending flange abutting the flange of the other shell member for sealing said outlet chamber and extending beneath the lower end of said inner tube for closing said inner tube and thereby directing said exhaust gases radially outward through said catalyst bed.

4,208,375

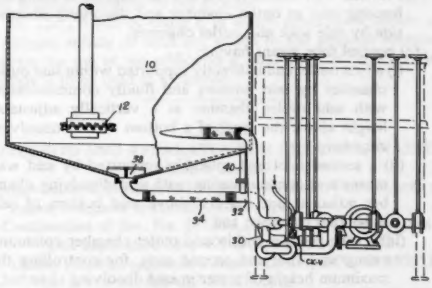
MIXING SYSTEM

Max L. Bard, 1604 E. Fourth St., Joplin, Mo. 64801

Filed Jan. 3, 1977, Ser. No. 756,008

Int. Cl.[2] B01J *8/10;* **B01F** *5/16;* **C01B** *25/28*

U.S. Cl. 422—225 **8 Claims**



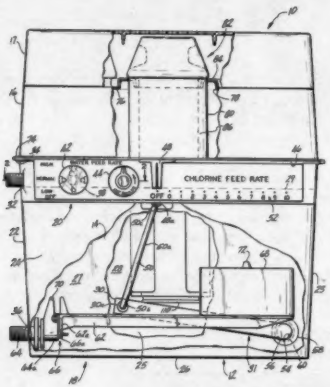
1. An apparatus for mixing at least one additional fluid material into a first fluid material, the combination comprising: a vat containing said first fluid material, mixing means disposed in

said vat, a suction pipe connected to said vat to remove said first fluid material, a pump connected to said suction pipe to urge along said first fluid material, a return pipe from said pump to said vat, a venturi disposed on said return pipe having a converging portion proximate to said pump and a diverging portion proximate to said vat and a throat area in between, a first pipe having an outlet on said diverging portion of said venturi which adds said additional fluid material downstream of said throat area, a flow divider provided substantially at the point at which the return pipe directs the flow of first and additional fluid into said vat and in which vertically planar blades are provided in said vat integral to said flow divider to subdivide the flow of first fluid with entrained second fluid as it enters said vat, and said blades have a terminal portion remote from said return pipe that are angled to said vertically planar blades.

4,208,376
WATER TREATMENT CHEMICAL DISPENSER WITH CONTROL TUBE

Arlon G. Sangster, Sterling, Mass.; John M. Casberg, Cheshire, and Joseph J. Tepas, Easton, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Mar. 13, 1978, Ser. No. 886,216
Int. Cl.[2] B67D 5/22
U.S. Cl. 422—261 **13 Claims**



1. Apparatus for dispensing and dissolving soluble water treatment materials, comprising:

(a) a housing having an upper inlet opening adjacent a top thereof and a lower outlet opening adjacent a bottom thereof;

(b) vertical wall means, within said housing, for dividing said housing into an outlet chamber and dissolving chamber side by side with said outlet chamber;

(c) control tube means having:

(i) a first outlet end indirectly supported within said outlet chamber by said housing and fluidly communicating with said outlet chamber at a vertically adjustable height above the level of a bottom of said dissolving chamber;

(ii) a second inlet end rotatably supported by said wall means and communicating with said dissolving chamber adjacent but slightly above said bottom of said dissolving chamber; and

(iii) a tube portion within said outlet chamber communicating said first and second ends, for controlling the maximum height of water in said dissolving chamber;

(d) support means, attached to said housing, for supporting and holding at least one cartridge containing said soluble material to be dissolved with the lower end of said cartridge disposed in said dissolving chamber immersed to a depth determined by said adjusted height of said first end of said control tube means;

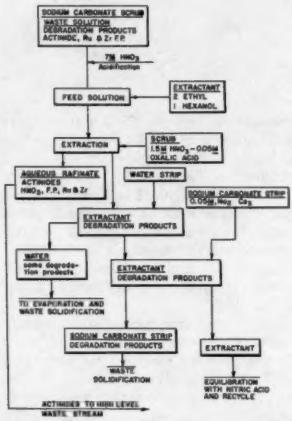
(e) outlet valve assembly means, for automatically allowing fluid communication between said lower outlet opening and said outlet chamber only when said outlet chamber contains a treated water to a height above said lower outlet opening; and

(f) inlet valve assembly means, for allowing an adjustable selected volume flow rate of water from said upper inlet opening into said dissolving chamber.

4,208,377
PROCESS FOR RECOVERING ACTINIDE VALUES

E. Philip Horwitz, Elmhurst, and George W. Mason, Clarendon Hills, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 25, 1978, Ser. No. 928,026
Int. Cl.[2] C02B 1/32
U.S. Cl. 423—8 **8 Claims**


SODIUM CARBONATE SCRUB WASTE SOLUTION DEGRADATION PRODUCTS ACTINIDES, Fe & Zr, F⁻
7N HNO3 Acidification
FEED SOLUTION
EXTRACTANT 2 ETHYL 1 HEXANOL
EXTRACTION
SCRUB 1.5M HNO3 - 0.05M OXALIC ACID
AQUEOUS RAFFINATE ACTINIDES HNO3, F⁻, Fe & Zr
WATER STRIP
SODIUM CARBONATE STRIP 0.05M Na2CO3
EXTRACTANT DEGRADATION PRODUCTS
WATER some degradation products
EXTRACTANT DEGRADATION PRODUCTS
TO EVAPORATION AND WASTE SOLIDIFICATION
SODIUM CARBONATE STRIP DEGRADATION PRODUCTS
EXTRACTANT
WASTE SOLIDIFICATION
EQUILIBRATION WITH NITRIC ACID AND RECYCLE
ACTINIDES TO HIGH LEVEL WASTE STREAM

1. A process for rendering actinide values recoverable from sodium carbonate scrub waste solutions containing these and other values along with radiolytic and hydrolytic degradation products from neutral organophosphorous extractants used for the reprocessing of irradiated nuclear reactor fuels comprising:

making the scrub waste solution acidic with a mineral acid to form a feed solution;

contacting the feed solution with a water-immiscible highly polar organic extractant which selectively extracts the degradation products away from the feed solution; and

separating the feed solution from the loaded extractant, whereby the actinide values are readily recoverable.

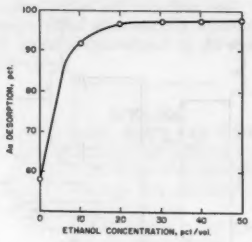
4,208,378
DESORPTION OF GOLD FROM ACTIVATED CARBON

Harold J. Heinen; David G. Peterson, and Roald E. Lindstrom, all of Reno, Nebr., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Continuation-in-part of Ser. No. 660,942, Feb. 24, 1976, abandoned. This application Apr. 11, 1977, Ser. No. 786,739
Int. Cl.[2] C01G 3/00
U.S. Cl. 423—27 **5 Claims**

1. A process for desorption of gold from an activated carbon loaded by treatment with a leach solution containing calcium or sodium cyanide and lime comprising contacting the carbon

with stripping solution consisting essentially of about 20 to 30 percent by volume of a water soluble alcohol and about 80 to



70 percent by volume of an aqueous solution of a strong base, the operating temperature being about 80° to 90° C.

4,208,379

RECOVERY OF METALS FROM ATLANTIC SEA NODULES

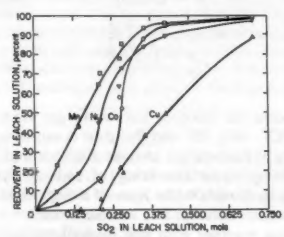
John E. Pahlman, Bloomington, and Sanaa E. Khalafalla, Minneapolis, both of Minn., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Apr. 4, 1979, Ser. No. 27,135

The portion of the term of this patent subsequent to Feb. 6, 1995, has been disclaimed.

Int. Cl.² C01G *45/00, 51/00, 53/00*

U.S. Cl. 423—49 **6 Claims**



1. A process for recovery of metal values from Atlantic sea nodules comprising nickel, cobalt, manganese, copper, iron and aluminum, said process consisting essentially of (1) reducing the nodules to a particle size of less than about 100 mesh, (2) pretreating the nodule particles with a dilute aqueous solution of acetic acid for a time sufficient to leach a substantial quantity of calcareous and carbonaceous material from the nodules, and (3) leaching the pretreated nodules with dilute sulfurous acid to selectively extract nickel, cobalt and manganese, while leaving the major proportion of the copper, iron, and aluminum in the residue.

4,208,380

PROCESS FOR THE RECOVERY OF COBALT FROM ITS IMPURE, AQUEOUS, IN PARTICULAR NICKEL-BEARING, SOLUTIONS AND CATALYST THEREFOR

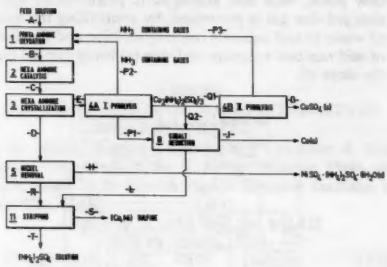
Matti J. Hämäläinen, Kokkola; Jussi K. Rastas, Pori; Heikki A. Tiitinen, Ulvila, and Tom O. Niemi, Öja, all of Finland, assignors to Outokumpu Oy, Helsinki, Finland

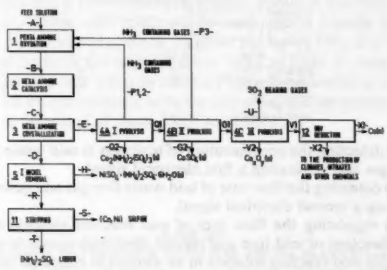
Filed Jul. 7, 1978, Ser. No. 922,762

Claims priority, application Finland, Jul. 15, 1977, 772210

Int. Cl.² C01G *51/10, 51/12; C22B 23/04*

U.S. Cl. 423—143 **17 Claims**





1. A process for the recovery of cobalt as a finely-divided and anhydrous salt from impure aqueous solutions of cobalt, comprising subjecting the aqueous solution to oxidation at an elevated temperature in the presence of ammonia, an ammonium salt, and a metal sulfide catalyst promoting the formation of cobalt(III) hexammine ions to form cobalt(III) hexammine salt, crystallizing a cobalt(III) hexammine salt out of the solution, separating the salt from the solution, pyrolysing the separated salt to form a cobalt(II) salt and ammonia, and recycling the released ammonia to the process.

15. The process of claim 1, in which ammonium sulfide or hydrogen sulfide or both are added to the aqueous solution before the use of the sulfide as a catalyst or at the time the sulfide is to be used as a catalyst.

4,208,381

METHOD AND APPARATUS FOR CLEANING WASTE FLUE GASES

Fumio Isahaya, Hitachi, and Tugihiro Yukitake, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Japan

Continuation of Ser. No. 197,376, Nov. 10, 1971, abandoned. This application May 27, 1977, Ser. No. 801,328

Claims priority, application Japan, Dec. 4, 1970, 45-107811

Int. Cl.² B01D *53/34*

U.S. Cl. 423—210 **17 Claims**

1. A method of cleaning waste flue gas, which comprises the steps of:

(a) spraying an aqueous reactant solution into a waste flue

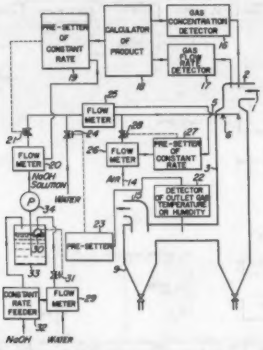
gas introduced into a tower, said waste flue gas containing a water content of about 10% by volume,

(b) absorbing and reacting toxic gas in the flue gas in and with droplets of the sprayed reactant solution,

(c) vaporizing water from the droplets and drying the reaction products by the sensible heat of the waste flue gas, all of the above steps of operation being completed within the tower.

(d) separating and collecting the reaction products in the form of solid particles,

(e) controlling the temperature of the waste flue gas discharged from the tower into the atmosphere above the dew point, such that atmospheric pollution by the discharged flue gas is prevented, by controlling the amount of water in said aqueous reactant solution and the amount of said reactant solution; said step (e) being carried out by the steps of:



(f) detecting the concentration of toxic gas in said waste flue gas and generating a first electrical signal,

(g) detecting the flow rate of said waste flue gas and generating a second electrical signal,

(h) regulating the flow rate of said reactant solution as a function of said first and second electrical signals to supply said reactant solution in an amount at least equivalent to the amount of said toxic gas,

(i) detecting the temperature of the discharged waste flue gas and generating a third electrical signal,

(j) regulating the flow rate of water mixed with said reactant solution as a function of said third electrical signal, and

(k) supplying said reactant solution to which the flow rate of water has been regulated to said waste flue gas in said tower.

4,208,382

REMOVING H_2S FROM GAS WITH RECYCLED NMP EXTRACTION SOLVENT

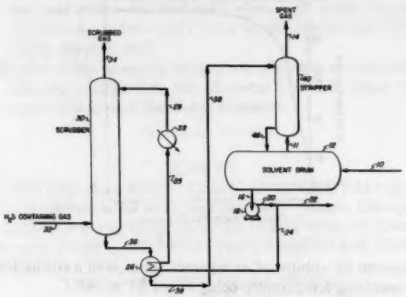
John H. Blume, Chester; James D. Bushnell, Berkeley Heights, and Milton D. Leighton, Florham Park, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 27, 1978, Ser. No. 973,680

Int. Cl.² B01D *53/34*

U.S. Cl. 423—210 **8 Claims**

1. In a process for removing H_2S from an H_2S-containing gas stream comprising passing said gas stream into a scrubbing zone wherein it is contacted with liquid NMP to remove most of said H_2S from said gas stream to form an H_2S-rich NMP solution, heating said H_2S-rich NMP solution, passing said hot solution to a gas stripping zone to remove most of the H_2S from said solution to form an H_2S-lean NMP solution, and extracting a hydrocarbon oil with an NMP solution, recovering hot liquid NMP from said extracted oil and combining it with said H_2S lean NMP and wherein said combined solution comprises said hot NMP solution used to extract said oil and said H_2S-lean NMP, the improvement which comprises heating said H_2S-rich NMP solution to the temperature required for stripping same by indirectly contacting same, in heat exchange relationship, with a portion of said hot, liquid, combined NMP solution employed as the sole heat source.



4,208,383

PROCESS AND APPARATUS FOR THE ABSORPTIVE REMOVAL OF POLLUTANTS FROM WASTE GASES

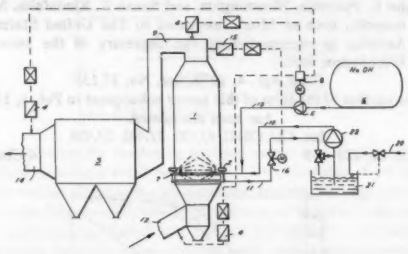
Theodor Kisters, and Alfred Vogler, both of Krefeld, Fed. Rep. of Germany, assignors to Babcock-Bsh Aktiengesellschaft Vormals Büttner-Schilde-Haas AG, Krefeld, Fed. Rep. of Germany

Filed Sep. 5, 1978, Ser. No. 939,373

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1977, 2739509

Int. Cl.² B01D *53/34*

U.S. Cl. 423—215.5 **4 Claims**



1. A process for purging hot waste gas from pollutants including HCL, SO_2, HF and flue dust comprising the steps:

(a) passing the waste gas into an absorber and injecting a neutralizing agent consisting of sodium hydroxide or calcium hydroxide in the form of a dispersion or aqueous suspension or solution into said absorber;

(b) injecting together with said neutralizing agent water in such an amount into said absorber that the water will completely evaporate while cooling said waste gas and said neutralizing agent will react with said pollutants to form dry salts therewith;

(c) passing the gas from said absorber through a filter to separate said dry salts from the gas;

(d) continuously measuring the concentration of said pollutants in said waste gas at a location upstream of the injection of water and neutralizing agent into said absorber and at a location upstream and downstream of the separation of said dry salts from said waste gas;

(e) automatically and continuously adjusting the amount of neutralizing agent injected into said absorber depending

on the measuring of the concentration at said three locations so as to always react at least a stoichiometric amount of neutralizing agent with said gas;

(f) continuously measuring the temperature of the gas between said absorber and said filter; and

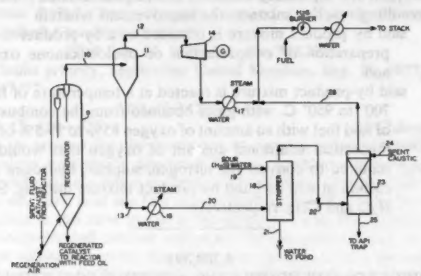
(g) continuously and automatically adjusting the amount of injected water in dependence on the measured temperature of the gas.

4,208,384

ENERGY RECOVERY, SOUR GAS STRIPPING AND CAUSTIC NEUTRALIZATION USING COMBUSTION GASES CONTAINING SOLIDS

Norris W. Mitchell, Sweeney, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 5, 1979, Ser. No. 1,346
Int. Cl.[2] B01D *53/34*
U.S. Cl. 423—220 **5 Claims**



1. A process for the recapture of energy from a hot combustion gas stream containing solids and carbon dioxide which comprises in a solids removal zone removing from said gases sufficient of said solids to result in a first stream of hot gases in which the residual contained solids, if any, will be at a maximum tolerable in an expansion zone, passing the gases of residual solids content through an expansion zone to accomplish an evergy conversion and/or recovery and thence to disposal; withdrawing from said solids removal zone a second stream of gases containing all of the, or remainder of, said contained solids, said second stream of gases containing substantial quantities of carbon dioxide, and passing said second stream into a stripping zone, in said stripping zone stripping with said second stream hydrogen sulfide from sour water, then in the contacting zone a third stream thus produced in said stripping zone is contacted with an alkaline solution to neutralize said solution, withdrawing from said contacting zone a substantially neutralized, disposable solution, recovering gases from said contacting zone and disposing of said gases to the atmosphere.

4,208,385

PROCESS FOR DEFOAMING ACID GAS SCRUBBING SOLUTIONS AND DEFOAMING SOLUTIONS

Max L. Robbins, South Orange, and Edwin R. Ernst, Kendall Park, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 4, 1978, Ser. No. 930,915
Int. Cl.[2] B01D *53/34*
U.S. Cl. 423—226 **28 Claims**

1. In a process for removing CO_2 from gaseous feeds containing CO_2, which comprises:

(1) contacting said gaseous feeds with an aqueous scrubbing solution comprising: (a) an alkaline material comprising a basic alkali metal salt or alkali metal hydroxide, (b) an activator for said alkaline material comprising at least one amine activator for said alkaline material, (c) water and (d) at least one antifoaming agent; and

(2) regenerating said aqueous scrubbing solution at conditions whereby CO_2 is desorbed from said aqueous scrubbing solution, the improvement which comprises providing at least one antifoaming agent comprising polyoxyethylene polyoxypropylene block copolymers of the general formula:

$$HO(C_2H_4O)_a(C_3H_6O)_b(C_2H_4O)_cH$$

wherein a and c are integers such that the hydrophile portion represented by (C_2H_4O) constitutes from about 10 to about 30 weight percent of the block copolymer and b is an integer such that the hydrophobe represented by (C_3H_6O) has a molecular weight from about 1000 to about 2150.

4,208,386

UREA REDUCTION OF NO_x IN COMBUSTION EFFLUENTS

John K. Arand, Rancho Palos Verdes; Lawrence J. Muzio, Laguna Niguel, and John G. Sotter, Mission Viejo, all of Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Mar. 3, 1976, Ser. No. 663,415
Int. Cl.[2] B01D *53/34*
U.S. Cl. 423—235 **9 Claims**

1. A process for selectively reducing NO_x in a combustion effluent containing NO_x comprising:

contacting a NO_x containing effluent stream in the presence of oxygen with urea, wherein said urea is present in an amount of about 0.1 to 10 moles per moles NO_x at a temperature in the range of about 1600° to 2000° F. with the proviso that when an ancillary reducing material is introduced concurrently with the said urea, said temperature is in the range of about 1300° to 2000° F.

4,208,387

REMOVAL OF SULFUR DIOXIDE FROM WASTE GASES

Donald L. Klass, Barrington, and John R. Conrad, Downers Grove, both of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Continuation-in-part of Ser. No. 439,285, Feb. 4, 1974, abandoned. This application Aug. 20, 1976, Ser. No. 716,160
Int. Cl.[2] C01B *17/00*
U.S. Cl. 423—243 **3 Claims**

1. A method for removing sulfur dioxide from waste gases which may have low concentrations of sulfur dioxide and wherein said waste gas includes carbon dioxide, which includes the steps of:

contacting a waste gas stream with a free tertiary amine which is not in water solution, said tertiary amine having a basic strength of greater than pK_b5 to collect the sulfur dioxide as a coordinate covalent complex which is sufficiently stable to be removed from the waste gas and thereby to reduce the sulfur dioxide content to detectable zero levels,

said free tertiary amine characterized in being substantially unreactive with any present carbon dioxide, and being further characterized by the carbon dioxide being unreactive with the tertiary amine so as not to reduce the absorptive capacity of the tertiary amine relative to the sulfur dioxid.,

thermally treating the coordinate covalent complex which is unstable to thermal regeneration temperatures,

collecting a stream of liberated sulfur dioxide, and

recovering the regenerated tertiary amine for subsequent contact with a waste gas stream containing sulfur dioxide.

4,208,388

FLOW AID

William R. Nicholson, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Sep. 28, 1978, Ser. No. 946,485
Int. Cl.[2] C01F 11/02
U.S. Cl. 423—268 10 Claims

1. A method for treatment of lime to enhance the flowability thereof, said method consisting of the steps of:

(a) applying to the lime to be treated from about 0.025 to about 0.5 parts by weight, based on 100 parts by weight of lime, of a fluid siloxane having a viscosity of from about 0.65 to about 1000 centistokes and selected from the group consisting of trimethylsilyl-endblocked polymethylhydrogensiloxane, trimethysilyl-endblocked polydimethylsiloxane, hydroxyl-endblocked polydimethylsiloxane, and mixtures thereof; and,

(b) intimately contacting said fluid with the lime to form a treated lime having enhanced flowability compared to untreated lime,

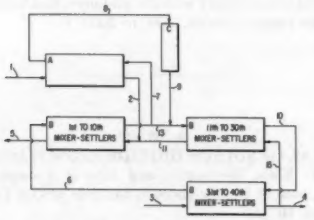
the foregoing steps being performed at ambient temperature of from 5° to 50° C. and in the absence of added catalyst.

4,208,389

PURIFICATION OF PHOSPHORIC ACID

Yoichi Hiraga, and Mitsuo Kikuchi, both of Shin-nanyo, Japan, assignors to Toyo Soda Manufacturing Company, Limited, Yamaguchi, Japan

Continuation-in-part of Ser. No. 855,689, Nov. 29, 1977, abandoned. This application Feb. 6, 1979, Ser. No. 9,912
Claims priority, application Japan, Dec. 27, 1976, 51-156348
Int. Cl.[2] C01B 25/22
U.S. Cl. 423—321 S 5 Claims



1. A process for purifying wet process phosphoric acid prepared by treating a phosphate rock with sulfuric acid, which comprises:

extracting said wet process phosphoric acid wherein the concentrations of P_2O_5 and R_2O_3 are greater than 20 wt.% and greater than 20 wt.% respectively, with an organic solvent containing an equilibrium concentration of phosphoric acid in a first extraction section such that substantial extraction of phosphoric acid from said wet process phosphoric acid is prevented while the organic impurities in said wet process phosphoric acid are substantially extracted and under conditions which prohibit significant extraction of iron impurities into said solvent extractant;

extracting the extracted wet process phosphoric acid of reduced organic impurity content from said first extraction section with an organic solvent in a second extraction section;

returning a portion of the solvent phase from the second extraction section to the solvent extraction phase of said first extraction section;

removing the organic impurities from the solvent phase which is obtained from the first extraction section; and

returning at least a portion of the solvent phase from which the organic impurities have been removed to said second extraction section.

4,208,390

PROCESS FOR THE RECOVERY OF AMMONIA AND SULPHUR DIOXIDE FROM A CONTAMINATED AMMONIUM SALT OF SULPHURIC ACID

Teruhiko Hirabayashi, Tokyo, Japan, and Willem J. Wassen, Geleen, Netherlands, assignors to Nittetu Chemical Engineering Ltd. (NICE), Tokyo, Japan and Stamicarbon, B.V., Geleen, Netherlands

Filed Apr. 24, 1978, Ser. No. 899,396
Claims priority, application Netherlands, Apr. 25, 1977, 7704481
Int. Cl.[2] C01C 1/02; C01B 17/50
U.S. Cl. 423—356 8 Claims

1. In a process for the recovery of ammonia and sulphur dioxide from a by-product mixture containing ammonium salt of sulphuric acid and organic impurities by reacting said by-product mixture in a finely divided state at an elevated temperature with gases obtained from the combustion of a fuel with oxygen and separating ammonia and sulphur dioxide from the resulting reaction mixture, the improvement wherein

said by product mixture is obtained as a by-product in the preparation of ϵ-caprolactam or cyclohexanone oxime, and

said by-product mixture is reacted at a temperature of from 700° to 950° C. with gases obtained from the combustion of said fuel with an amount of oxygen 85% to 99.5% of the theoretical additional amount of oxygen that would be required to convert the nitrogen, sulphur, hydrogen and carbon in said fuel and by-product mixture into N_2, SO_2, H_2O and CO_2, respectively.

4,208,391

PROCESS FOR PRODUCING AQUEOUS SOLUTION OF CALCIUM NITRITE

Makoto Endo, and Kohji Kusahara, Fuchumachi, Japan, assignors to Nissan Chemical Industries, Limited, Tokyo, Japan

Filed Aug. 14, 1978, Ser. No. 933,582
Claims priority, application Japan, Sep. 13, 1977, 52-110136
Int. Cl.[2] C01B 21/20
U.S. Cl. 423—385 6 Claims

1. In a process for producing an aqueous solution of calcium nitrite having high purity and high concentration by contacting a nitrogen oxides containing gas with an aqueous slurry of calcium hydroxide, the improvement wherein a gas having a temperature of 170°–180° C. and having a nitrogen oxide concentration of 5 to 10 vol.% and a molar ratio of NO/NO_2 of 1.2 to 1.5 is contacted with the aqueous slurry having 20 to 40 wt.% of a calcium hydroxide content at 40° to 70° C. until the calcium hydroxide content is reduced to a range of 3 to 6 wt.% as a first stage; and the unabsorbed and unreacted gas is separated and the gas is oxidized at 60°–80° C. to form a gas having a nitrogen oxides concentration of 1 to 3 vol.% and a molar ratio NO/NO_2 of 1.2 to 1.5 and the resulting gas is contacted with the aqueous slurry separated from the first stage and having 3 to 6 wt.% of a calcium hydroxide content and containing calcium nitrite, at 40° to 70° C. to reduce the calcium hydroxide content to less than 3 wt.% as a second stage and filtering the resulting solution.

4,208,392

TWO-STEP PROCESS FOR REMOVING BORON COMPOUNDS FROM AQUEOUS SOLUTIONS OF MAGNESIUM CHLORIDE

Ronald J. Allain, Richmond, Tex.; David G. Braithwaite, Village of Golf, Fla., and Ansell L. Reid, Sugar Land, Tex., assignors to Nalco Chemical Co., Oak Brook, Ill.

Filed Mar. 23, 1979, Ser. No. 23,066
Int. Cl.[2] C01F 5/30
U.S. Cl. 423—497 4 Claims

1. A two-step process for removing boron impurities from aqueous solutions of magnesium chloride which comprises treating these solutions with more than 3 moles of methanol in

the presence of an acid catalyst to form trimethyl borate and then removing the trimethyl borate and excess methanol from such solutions by means of distillation and then extracting from the thus-treated solutions any remaining boron compounds by means of a hydrocarbon liquid said hydrocarbon liquid, being the sole extracting agent.

3. A two-step process for removing boron impurities from aqueous solutions of magnesium chloride which comprises extracting from these solutions boron compounds by means of a hydrocarbon liquid, said hydrocarbon liquid, being the sole extracting agent, and then treating these solutions with more than 3 moles of methanol in the presence of an acid catalyst to form trimethyl borate and then removing the trimethyl borate and excess methanol from such solutions by means of distillation.

4,208,393

PURIFICATION PROCESS

Gratian LeBel, Tracy, Canada, assignor to Tioxide Group Limited, Cleveland, England

Filed Sep. 14, 1978, Ser. No. 942,335

Claims priority, application United Kingdom, Sep. 16, 1977, 38647/77

Int. Cl.² C01F *11/46*

U.S. Cl. 423—555 **12 Claims**

1. A process for the treatment of aqueous sulphuric acid solutions containing dissolved ferrous sulphate comprising forming such a solution containing from 140 to 220 grams/liter free sulphuric acid in a first zone; adjusting the pH value of the solution in this zone to one in the range 3 to 4 by the addition of finely-divided calcium carbonate thereby precipitating calcium sulphate; passing the slurry thus produced to a second zone; adding to the second zone an aqueous solution of sulphuric acid containing from 3 to 80 grams/liter of free sulphuric acid; adjusting the pH value of the mixture in the second zone to one in the range 3.5 to 6 by the addition of finely-divided calcium carbonate thereby precipitating calcium sulphate and thereafter recovering from the second zone calcium sulphate suitable for use in the manufacture of plasterboard.

4,208,394

COMMERCIAL PRODUCTION OF TRANSITION METAL SULFIDES FROM THEIR HALIDES

Russell R. Chianelli, Brooklyn, N.Y., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 3, 1975, Ser. No. 637,222

Int. Cl.² C01B *17/00*

U.S. Cl. 423—561 R **16 Claims**

1. A process for producing a transition metal disulfide which consisting of reacting a halide selected from tetravalent and pentavalent halides of at least one transition metal selected from Groups IVB or VB of the Periodic Table of the Elements with carbon disulfide at a temperature between about 400° C. and 800° C. to form the transition metal disulfide.

4,208,395

REMOVAL OF SULFUR DIOXIDE FROM FLUE GAS

Everett Gorin, San Rafael, Calif., assignor to Continental Oil Company, Stamford, Conn.

Filed Dec. 5, 1978, Ser. No. 966,546

Int. Cl.² C01B *17/04*

U.S. Cl. 423—567 A **2 Claims**

1. In a regenerative process for the removal of SO_2 from an SO_2-containing gas which comprises the following essential operations:

(a) maintaining in a scrubbing system a scrubbing zone in which said SO_2-containing gas is continuously contacted by aqueous sodium or potassium carbonate solution under sulfite-forming conditions, to thereby remove SO_2 from said gas by conversion of SO_2 to sulfite;

(b) maintaining in said scrubbing system a separate thiosulfate generation zone in which effluent sulfite solution from said scrubbing zone is continuously contacted by an aqueous solution of sulfide under thiosulfate-forming conditions to convert sulfite to thiosulfate;

(c) maintaining a continuous circulation of aqueous thiosulfate solution of substantially constant thiosulfate concentration from said thiosulfate generation zone to said scrubbing zone in said scrubbing system; and

(d) maintaining a regeneration system in which thiosulfate contained in a slip stream from said scrubbing system is converted to a mixture of sulfide and carbonate in the following ratio, R:

$$R = \frac{2(S^{\circ}) + 3(S^{-2})}{\Sigma(M)}$$

where the valve of R is no greater than 1;

(S°)=gram atoms sulfur with valence number zero per 100 grams of solution;

(S^{-2})=gram atoms of M per 100 grams of solution present in said solution as MHS, M_2S, M_2S_x, M_2CO_3, $MHCO_3$, MOH; and

M=Na or K,

the improvement in said regeneration system which comprises:

(1) reacting the thiosulfate in said slip stream with SO_2 gas at a tempreature greater than about 300° F. and at a pressure sufficient to maintain an aqueous solution of M_2SO_4 in the reaction zone to produce an aqueous solution containing M_2SO_4 and molten S, and separately recovering said molten S and said aqueous solution containing M_2SO_4;

(2) reducing, said M_2SO_4 to M_2S by reaction with coal;

(3) carbonating, by reaction with CO_2 and H_2O, the M_2S to a mixture of sulfide and carbonate having a ratio, R, no greater than 1.

4,208,396

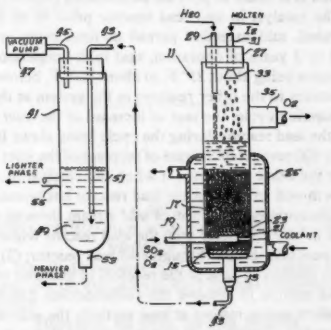
OXYGEN RECOVERY FROM GAS MIXTURES

John H. Norman, La Jolla, Calif., assignor to General Atomic Company, San Diego, Calif.

Continuation-in-part of Ser. No. 786,009, Apr. 8, 1977, Pat. No. 4,089,940, which is a continuation-in-part of Ser. No. 601,917, Aug. 4, 1975, abandoned. This application Dec. 30, 1977, Ser. No. 865,950

Int. Cl.² C01B *13/00*

U.S. Cl. 423—579 **4 Claims**



1. A method of recovering O_2 from a gaseous mixture containing SO_2 and O_2, which method comprises

injecting said mixture into a lower location of a reaction zone containing a liquid H_2O medium and I_2 at a controlled rate so that substantially all of said SO_2 is removed from said mixture, said SO_2 reacting chemically with the I_2 and the H_2O,

removing sulfuric acid and hydrogen iodide reaction products from said zone and

recovering O_2 substantially free from SO_2 from region above said zone.

4,208,397

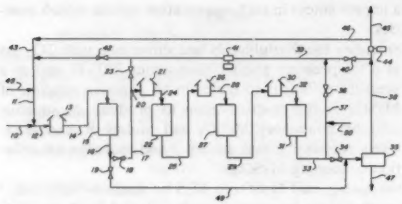
SEMI-REGENERATIVE REFORMING PROCESS PROVIDING CONTINUOUS HYDROGEN PRODUCTION

Ronald Coates, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 752,515, Dec. 20, 1976, abandoned. This application Jun. 12, 1978, Ser. No. 914,974

Int. Cl.[2] C01B *1/16*; B01J *23/90*

U.S. Cl. 423—651 **6 Claims**



1. A process for producing a hydrogen-containing gas continuously in the operation of a semi-regenerative unit for the reforming of a petroleum hydrocarbon stream in the presence of a reforming catalyst, which process comprises: (1) passing said stream under reforming conditions through each of the reactors of said unit, the reforming conditions that are employed in the lead reactor of said unit being relatively mild reforming conditions comprising an inlet temperature of about 845° F. to about 975° F., a pressure of about 50 psig to about 450 psig, a WHSV of about 2 to about 10 weight units of hydrocarbon per hour per weight unit of catalyst, and a rate of hydrogen-containing recycle gas of about 1,000 SCFB to about 5,000 SCFB in order to provide an extended period of time for using the catalyst in said lead reactor prior to its becoming deactivated, said extended period of time being at least 18 months to 3 years of operation, said inlet temperature to the lead reactor being about 25° F. to about 150° F. below the inlet temperatures to the other reactors in the system at the start of the processing cycle, the rate of increase of the inlet temperature to the lead reactor during the cycle being about 10 percent to about 100 percent of the rate of increase of the inlet temperatures to the other reactors; (2) when the catalyst in all of the reactors in said unit except the lead reactor has become deactivated, discontinuing the flow of said stream through all of the reactors in said unit other than the lead reactor while continuing the pass said stream through said lead reactor; (3) regenerating the catalyst in each of the reactors of said unit other than said lead reactor to remove the carbonaceous deposits from said catalyst and to restore at least partially the activity of said catalyst while continuing to pass said stream through said lead reactor under reforming conditions; (4) discontinuing the regeneration of the catalyst in each of the reactors of said unit other than the lead reactor and resuming the flow of said stream through all of the reactors in said unit; and (5) repeating all of the aforesaid steps until the catalyst in said lead reactor has become deactivated and it must be regenerated in order to provide some conversion of said stream to useful products.

4,208,398

TECHNETIUM-LABELED COMPLEXES, PRODUCTION AND USE THEREOF

David O. Kubiatowicz, Arden Hills, and Theodore F. Bolles, Woodbury, both of Minn., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 353,298, Apr. 23, 1973, abandoned. This application Apr. 21, 1975, Ser. No. 570,254

Int. Cl.[2] A61K *29/00, 43/00*

U.S. Cl. 424—1 **13 Claims**

1. A complex of Tc-99m with a compound of the group consisting of dimercaptosuccinic acid, mercaptosuccinic acid, mercaptoacetic acid, mercaptopropionic acid, 3-mercaptopropylsulfonic acid, thioglucose or thiolactic acid.

4,208,399

TOLYL ISOCYANATE TEST ANTIGENS, METHODS FOR THEIR PREPARATION AND USE IN DETECTING DIISOCYANATES AND ANTIBODIES TO DIISOCYANATES

Meryl H. Karol, and Yves C. Alarie, both of Pittsburgh, Pa., assignors to The University of Pittsburgh, Pittsburgh, Pa.

Filed Aug. 16, 1978, Ser. No. 934,023

Int. Cl.[2] G01N *33/16*; A61K *43/00*; C07G *7/00*

U.S. Cl. 424—1 **12 Claims**

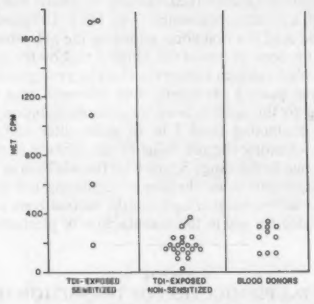


Figure 1 -- PRIST assay for tolyl-specific IgE in sera from workers exposed to TDI and from blood donors. Connected points indicate titers of sera taken one month apart from the same individual. Net cpm = cpm (TMI-HSA discs) - cpm (HSA discs).

9. A serological diagnostic test for a selected diisocyanate comprising the steps of:

(a) preparing an antigen of said selected diisocyanate by reacting a protein with a monoisocyanate derivative of said selected diisocyanate;

(b) adding said antigen to a paper disc activated with a coupling agent;

(c) buffering said disc with an incubation buffer;

(d) adding serum from a test subject to said buffered disc;

(e) incubating said serum and disc with anti-IgE-^{125}I; and

(f) counting said disc in scintillation fluid using a scintillation spectrometer.

4,208,400

ASSAY OF OESTROGEN

John C. Edwards, Amersham, England, assignor to The Radiochemical Centre Limited, Buckinghamshire, England

Filed May 22, 1978, Ser. No. 908,238

Claims priority, application United Kingdom, May 24, 1977, 21870/77

Int. Cl.[2] G01N *33/16*; A61K *43/00*

U.S. Cl. 424—1 **6 Claims**

1. In a method of performing a competitive immunoassay for unconjugated oestriol by

(a) providing a mixture of a standard amount of oestriol-containing sample to be assayed, a standard amount of a labelled version of oestriol, and a standard amount, insuffi-

cient to react with all the unconjugated oestriol and labelled oestriol present, of an antibody to oestriol,

(b) incubating the mixture, whereby a part of the unconjugated oestriol and a part of the labelled oestriol, the proportion depending on the initial concentrations of unconjugated oestriol and labelled oestriol present, become bound to the antibody,

(c) separating the part of the unconjugated and the labelled oestriol bound to the antibody from the part not so bound, and measuring the concentration of the bound labelled oestriol and/or the unbound labelled oestriol,

the improvement which consists in providing in the initial mixture progesterone in an amount large enough to react with the major part of any steriod-binding proteins present in the sample to be assayed but not so large as to react with more than a minor part of the antibody to oestriol, whereby nearly all unconjugated oestriol present in the initial mixture is available for reaction with the oestriol antibody, and nearly all the oestriol antibody present in the initial mixture is available for reaction with unconjugated and labelled oestriol.

4,208,401

QUATERNARY AMMONIUM ALKYLENE DIPHOSPHONATE ANTI-CALCULUS AGENTS

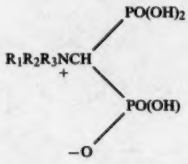
Robert A. Bauman, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 825,882, Aug. 19, 1977, abandoned. This application Sep. 22, 1978, Ser. No. 945,053

Int. Cl.[2] A61K *7/22;* **C07F** *9/38*

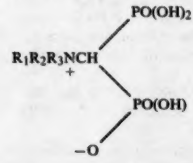
U.S. Cl. 424—54 **7 Claims**

1. A non-staining and stain-inhibiting anticalculus oral composition comprising an oral vehicle containing a non-staining and stain-inhibiting amount of an anticalculus agent selected from the group consisting of a quaternary ammonium alkylene diphosphonate having the structural formula:



wherein R_1, R_2 and R_3 are each independently an alkyl group containing from 1 to about 20 carbon atoms or an aralkyl group wherein the aryl radical is a phenyl and the alkyl radical contains 1–8 carbon atoms, and its pharmaceutically acceptable salts, and a dental-staining cationic antibacterial agent, said agent being present in amount of about 0.01 to 5% by weight, with which said anticalculus agent is completely compatible, said anticalculus agent being effective to inhibit dental stain formation otherwise caused by said antibacterial agent.

5. A non-staining method of inhibiting the formation of dental calculus which comprises treating the oral cavity with an oral composition containing a non-staining and stain-inhibiting amount of the anticalculus agent selected from the group consisting of a quaternary ammonium alkylene diphosphonate having the structural formula:



wherein R_1, R_2 and R_3 are each independently an alkyl group containing from 1 to about 20 carbon atoms or an aralkyl group wherein the aryl radical is a phenyl and the alkyl radical contains 1–8 carbon atoms, and its pharmaceutically acceptable salts.

4,208,402

PROCESS FOR IMPROVING THE APPEARANCE OF OILY HAIR OR SKIN

Pierre Bore, Montfermeil, and Lucienne Tourenq, Livry Gargan, both of France, assignors to L'Oreal, Paris, France

Filed Jan. 10, 1977, Ser. No. 758,329

Int. Cl.[2] A61K *7/00, 7/06, 7/48*

U.S. Cl. 424—70 **12 Claims**

1. A process for improving the appearance of hair, facial skin, or both, of a person whose sebaceous glands secrete excessive amounts of sebum which causes an oily appearance of said hair, said facial skin or both comprising

applying thereto, in an amount effective to improve said appearance by diminishing said oily appearance, a composition which is an aqueous or hydroalcoholic solution containing 0.5 to 1.5% by weight gelatin and partially hydrolyzed polyvinyl acetate, in an amount less than 30 weight percent, relative to the weight of gelatin present in said solution, said partially hydrolyzed polyvinyl acetate being soluble in water or in a hydroalcoholic solution wherein said partially hydrolyzed polyvinyl acetate has a viscosity at 25° C. lower than 5 cps in a 4% solution thereof.

11. A cosmetic composition for diminishing the oily appearance of hair or facial skin of a person whose sebaceous glands secrete excessive amounts of sebum and thus cause said hair or facial skin to have an oily and shiny appearance consisting essentially of an aqueous or hydroalcoholic solution of gelatin present in an amount ranging from 0.5 to 1.5 weight percent thereof and partially hydrolyzed polyvinyl acetate, in an amount less than 30 percent by weight relative to the weight of gelatin present in said composition, said partially hydrolyzed polyvinyl acetate being soluble in water or in a hydroalcoholic solution and having a viscosity at 25° C. lower than 5 cps in a 4% solution thereof.

4,208,403

A-21978 ANTIBIOTICS AND PROCESS FOR THEIR PRODUCTION

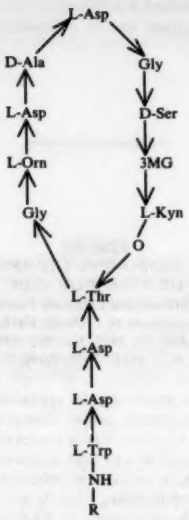
Robert L. Hamill, Greenwood, and Marvin M. Hoehn, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 16, 1978, Ser. No. 951,695

Int. Cl.[2] C12D *9/14*

U.S. Cl. 424—115 **11 Claims**

11. The A-21978C antibiotic complex, which is produced by submerged aerobic cultivation of *Streptomyces roseosporus* NRRL 11379 or an A-21978C-producing mutant thereof; and which comprises factors C_0, C_1, C_2, C_3, C_4 and C_5, which have the following structural formula:



wherein 3MG represents L-threo-3-methylglutamic acid, and R represents a specific fatty acid moiety as follows: 8-methyldecanoyl (C_1), 10-methylundecanoyl (C_2), 10-methyldodecanoyl (C_3), C_{10}-alkanoyl (C_0), C_{12}-alkanoyl (C_4), and C_{13}-alkanoyl (C_5).

4,208,404

GLUTARALDEHYDE STERILIZING COMPOSITIONS

Stanley M. Cowan, 1947 Mattawa Ave., Mississauga, Ontario, Canada

Continuation-in-part of Ser. No. 861,199, Dec. 16, 1977, abandoned, which is a continuation of Ser. No. 492,884, Jul. 29, 1974, abandoned. This application Oct. 23, 1978, Ser. No. 953,352

Int. Cl.[2] **A01N** *11/00, 9/00, 9/24*

U.S. Cl. 424—153 **10 Claims**

1. A method of killing dormant spores, which consists of contacting said spores with a sporicidally-effective amount of a liquid sterilizing composition having a pH from about 2 to less than 7 at a temperature of about 15° C. up to the boiling point of the composition,

said sterilizing composition consisting of:

a solvent selected from water and a mixture of water and a lower alkanol,

0.05 to 10% by weight of glutaraldehyde, and

at least 0.01% by weight up to saturation of the composition thereby of at least one highly ionizable neutral salt dissolved in the solvent and selected from the group consisting of lithium, sodium, potassium and ammonium salts of sulphuric acid, hydrochloric acid, nitric acid, citric acid or acetic acid, or mixtures thereof.

4,208,405

TRACE ELEMENT COMPOSITION FOR IRON DEFICIENCY ANEMIA

M. Taher A. Fouad, Layton, Utah, assignor to Kelatron Pharmaceutical Division of Intermountain Laboratories Inc., Ogden, Utah

Continuation-in-part of Ser. No. 859,638, Dec. 12, 1977, which is a continuation-in-part of Ser. No. 761,568, Jan. 24, 1977. This application Feb. 12, 1979, Ser. No. 11,264

Int. Cl.[2] **A61K** *37/00, 33/24*

U.S. Cl. 424—177 **5 Claims**

1. A synergistic dietary supplement composition of matter for iron deficiency anemia consisting of polypeptide bound iron, polypeptide bound copper and polypeptide bound molybdenum in sufficient amounts to improve iron uptake wherein said polypeptides are derived from foodstuff.

4,208,406

COMPOSITION FOR THE TREATMENT AND PREVENTION OF SKIN, EYE AND MUCOSAL INFLAMMATION

Eugene Lapinet, 17, Galerie Vivienne, Paris, France (75002); Georges Cehovic, 7, Residence de la Vallee, Palaiseau, France (92120), and Theodore Posternak, 25, Rue de l'Athenee, Geneva, Switzerland (1206)

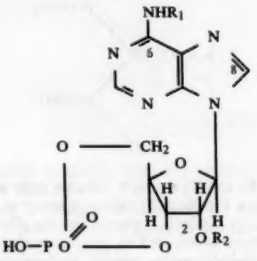
Filed Jul. 14, 1977, Ser. No. 815,653

Claims priority, application United Kingdom, Jul. 15, 1976, 29421/76; May 11, 1977, 19678/77

Int. Cl.[2] **A61K** *31/70;* **C07H** *17/00*

U.S. Cl. 424—180 **4 Claims**

1. Composition for treatment of inflammation of skin, eye and mucosa in animals especially, but not exclusively, by external topical application comprising an effective amount of cyclic nucleotide having the following structural formula:



wherein R_1 and R_2, either are both a butyryl radical or one stands for a hydrogen atom and the other for a butyryl radical any pharmaceutically acceptable salt of the same.

4,208,407

5-DEOXYFORTIMICIN A, 2,5-DIDEOXYFORTIMICIN A AND THE CORRESPONDING 4-N-ACYL AND ALKYL FORTIMICIN B DERIVATIVES THEREOF AND INTERMEDIATES THEREFOR

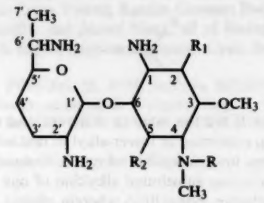
Ronald E. Carney, Gurnee; Jerry R. Martin, Waukegan; James B. McAlpine, Libertyville, and John S. Tadanier, Waukegan, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 5, 1979, Ser. No. 9,638

Int. Cl.[2] **A61K** *31/71;* **C07H** *15/22*

U.S. Cl. 424—180 **20 Claims**

1. A fortimicin antibiotic selected from the group consisting of 5-deoxyfortimicins and 2,5-dideoxyfortimicins represented by the formula:



wherein R is selected from the group consisting of acyl, hydroxyacyl, aminoacyl, N-monoloweralkylaminoacyl, N,N-diloweralkylaminoacyl, hydroxyacyl, hydroxy-substituted aminoacyl or an amino acid residue other than glycyl, loweralkyl, aminoloweralkyl, hydroxyloweralkyl, N-monoloweralkylaminoloweralkyl, N-N-diloweralkylaminoloweralkyl or hydroxy-substituted aminoloweralkyl; R_1 is hydrogen or hydroxy; and R_2 is hydrogen or hydroxy with the limitation that either R_1 and R_2 each are hydrogen or when only one of R_1 or R_2 are hydrogen, R_2 is hydrogen and R_1 is hydroxy and R_1 and R_2 both cannot be hydroxy.

9. A pharmaceutical composition comprising an anti-bacterially effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier or diluent.

4,208,408

SUBSTITUTED 1-OXA-4-AZA-2,6-DISILACYCLOHEXANES

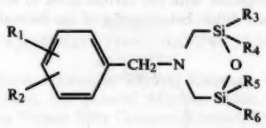
Sandor Barcza, West Orange, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 957,551, Nov. 3, 1978, abandoned, which is a continuation of Ser. No. 883,886, Mar. 6, 1978, abandoned. This application Nov. 30, 1978, Ser. No. 965,021

Int. Cl.³ C07F 7/10

U.S. Cl. 424—184 **21 Claims**

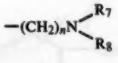
1. A compound of the formula



where

R_1 and R_2 each independently represent hydrogen, halo having an atomic weight of about 19 to 36, lower alkyl having 1 to 4 carbon atoms, lower alkoxy having 1 to 4 carbon atoms, trifluromethyl, or

R_1 is



and R_2 is hydrogen,

wherein

R_7 and R_8 are each independently hydrogen or lower alkyl having 1 to 2 carbon atoms,

n is 0 or 1, and

R_3, R_4, R_5 and R_6 each independently represent lower alkyl having 1 to 2 carbon atoms or

a pharmaceutically acceptable salt thereof.

4,208,409

N-[(PHOSPHINYL OR PHOSPHINOTHIOYL)AMINO]THIO-METHYLCARBAMATES AND PESTICIDAL METHODS

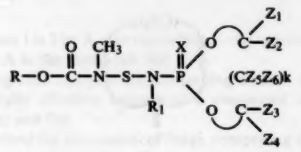
Stephen J. Nelson, Comstock Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 874,959, Feb. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 765,807, Feb. 4, 1977, Pat. No. 4,081,536. This application Nov. 20, 1978, Ser. No. 962,266

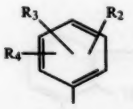
Int. Cl.² A01N 9/36; C07F 9/24

U.S. Cl. 424—209 **57 Claims**

1. N-[(phosphinyl)amino]thio- and N-[(phosphinothioyl-)amino]thiomethylcarbamates represented by the schematic formulae

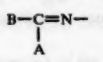


wherein, R is selected from the group consisting of



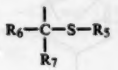
a.

wherein R_2, R_3, and R_4 are the same or different and are selected from the group consisting of hydrogen, lower-alkyl of one to five carbon atoms, inclusive, halogen, lower-alkoxy of one to five carbon atoms, inclusive, lower-alkylthio of one to five carbon atoms, inclusive, dialkylamino with each alkyl the same or different and having one to three carbon atoms, inclusive, and —N=CHN(CH₃)₂;

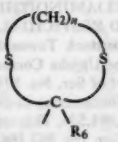


b.

wherein A and B are the same or different and are selected from the group consisting of lower-alkyl of one to five carbon atoms, inclusive, lower-alkylthio of one to five carbon atoms, inclusive, monocyano substituted alkylthio of one to five carbon atoms, inclusive, phenylthio wherein phenyl is unsubstituted or substituted with one to three substituents, same or different, selected from the group consisting of halogen and lower-alkyl of one to four carbon atoms, inclusive, cyano, alkoxy having one to five carbon atoms, inclusive, phenyl, and hydrogen, with the proviso that when B is hydrogen, A is of the formula



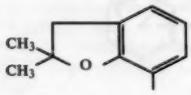
wherein R_5 is selected from the group consisting of alkyl of one to three carbon atoms, inclusive, and phenyl; R_6 is alkyl of one to three carbon atoms, inclusive; R_7 is selected from the group consisting of alkyl of one to three carbon atoms, inclusive and SR_8, wherein R_8 is alkyl and is the same alkyl group as R_5; and taking R_5 and R_8 together with the atoms to which they are attached form a dithioheterocyclic of the formula



wherein n is 2 or 3 and the alkylene portion of the ring is unsubstituted or substituted with one or two methyl groups; A and B taken together with the carbon atom to which they are attached form a dithio heterocyclic of the formula

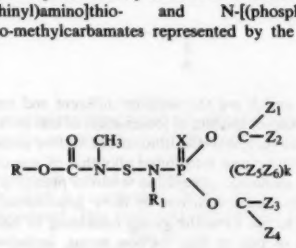
wherein m is 2 or 3 and the alkylene portion of the ring is unsubstituted or substituted with one to two methyl groups;

c.



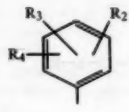
R_1 is selected from the group consisting of lower-alkyl, phenyl, substituted phenyl, phenlower-alkyl and cycloalkyl; X is oxygen or sulfur; and Z_1 thru Z_6 are the same or different and are selected from the group consisting of hydrogen, methyl and ethyl and k is zero or one.

22. The method for controlling insect pests which comprises contacting susceptible insect pests with an effective amount of N-[(phosphinyl)amino]thio- and N-[(phosphinothioyl-)amino]thio-methylcarbamates represented by the schematic formula

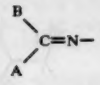


wherein R is selected from the group consisting of

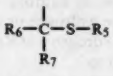
a.



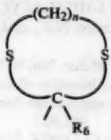
wherein R_2, R_3, and R_4 are the same or different and are selected from the group consisting of hydrogen, lower-alkyl of one to five carbon atoms, inclusive, halogen, lower-alkoxy of one to five carbon atoms, inclusive, halogen, lower-alkylthio of one to five carbon atoms, inclusive, dialkylamino with each alkyl the same or different and having one to three carbon atoms, inclusive, and $-N{=}CHN(CH_3)_2$; and



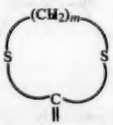
wherein A and B are the same or different and are selected from the group consisting of lower-alkyl of one to five carbon atoms, inclusive, lower-alkylthio of one to five carbon atoms, inclusive, monocyano substituted alkylthio of one to five carbon atoms, inclusive, phenylthio wherein phenyl is unsubstituted or substituted with one to three substituents, same or different, selected from the group consisting of halogen and lower-alkyl of one to four carbon atoms, inclusive, cyano, alkoxy having one to five carbon atoms, inclusive, phenyl and hydrogen, with the proviso that when B is hydrogen, A is of the formula



wherein R_5 is selected from the group consisting of alkyl of one to three carbon atoms, inclusive, and phenyl; R_6 is alkyl of one to three carbon atoms, inclusive; R_7 is selected from the group consisting of alkyl of one to three carbon atoms, inclusive, and SR_8, wherein R_8 is alkyl and is the same alkyl group as R_5, and taking R_5 and R_8 together with the atoms to which they are attached form a dithio heterocyclic of the formula

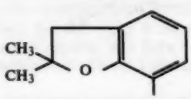


wherein n is 2 or 3 and the alkylene portion of the ring is unsubsituted or substituted with one or two methyl groups; A and B taken together with the carbon atom to which they are attached form a dithio heterocyclic of the formula



wherein m is 2 or 3 and the alkylene portion of the ring is unsubstituted or substituted with one to two methyl groups; and

c.



R_1 is selected from the group consisting of lower-alkyl, phenyl, substituted phenyl, phenlower-alkyl, and cycloalkyl; X is oxygen or sulfur; and Z_1 thru Z_6 are the same or different and are selected from the group consisting of hydrogen, methyl and ethyl; and k is zero or one.

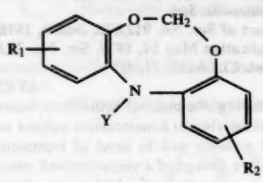
4,208,410

DIBENZO[d,g][1,3,6]DIOXAZOCINE DERIVATIVES

László Rózsa; Lujza Petócz; Katalin Grasser; Ibolya Kosóczky; Enikó Kiszelly, and József Nagy, all of Budapest, Hungary assignors to Egyt Gyogyszervegyeszeti Gyar, Budapest, Hungary

Filed Jul. 25, 1978, Ser. No. 927,934
Claims priority, application Hungary, Aug. 2, 1977, EE 2515
Int. Cl.[2] C07D *267/22;* A61K *31/395*
U.S. Cl. 424—244 5 Claims

1. Compounds of the general formula I

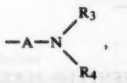


(I)

wherein

R_1 and R_2 independently represent hydrogen or halogen, and

Y stands for a group of formula



wherein

A stands for a straight or branched chained alkylene having from 2 to 5 carbon atoms and

R_3 and R_4 independently stand for an alkyl having from 1 to 4 carbon atoms,

and pharmaceutically acceptable acid addition salts thereof formed with an inorganic or organic acid.

5. A pharmaceutical composition effective as a local anesthetic and for treating Parkinson syndrome, comprising a therapeutically effective amount of a compound as claimed in claim 1, in admixture with a pharmaceutically acceptable excipient.

4,208,411

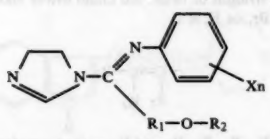
IMIDAZOLE DERIVATIVES HAVING FUNGICIDAL ACTIVITY

Katsuyata Ikura, Ninomiya; Kiyoshi Katsuura, Ohiso; Akira Nakada, Ohiso, and Masami Mizuno, Oshio, all of Japan, assignors to Nippon Soda Company Limited, Tokyo, Japan

Filed Mar. 14, 1978, Ser. No. 886,558
Claims priority, application Japan, Jul. 27, 1977, 52-89940
Int. Cl.[2] A01N *9/22;* C07D *233/56;* C07F *1/08, 3/06*
U.S. Cl. 424—245 9 Claims

1. A compound selected from the group consisting of

(a) an imidazole compound of the general formula



wherein

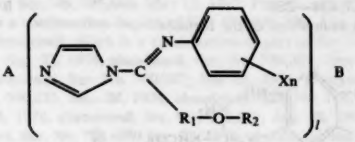
X is the same or a different substituent selected from the ground consisting of halogen, methyl, nitro and trifluoromethyl;

n is one or two;

R_1 is alkylene having 1 to 4 carbon atoms;

R_2 is alkyl having 1 to 8 carbon atoms, allyl, phenyl or phenyl substituted with methyl and chlorine; and

(b) a metal complex of the imidazole compound in (a) with a metal salt of the formula AB selected from the group consisting of $CuCl_2$, $CuSO_4$, $Cu(CH_3COO)_2$, $ZnCl_2$, $Zn(CH_3COO)$, and $FeCl_3$, said metal complex represented by the formula



wherein l is 2 or 3, corresponding to the valence of metal atom A in the metal salt AB.

4. A fungicidal composition, comprising an inert carrier and a fungicidally effective amount of a compound of claim 1 sections (a) and (b).

7. A method for the control of fungi, comprising applying to the locus to be protected an effective amount of a compound of claim 1.

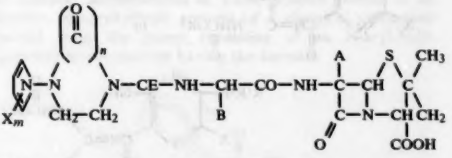
4,208,412

β-LACTAM ANTIBIOTICS

Michael Preiss, and Karl G. Metzger, both of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 26, 1978, Ser. No. 900,400
Claims priority, application Fed. Rep. of Germany, May 7, 1977, 2720580
Int. Cl.[2] A61K *31/40, 31/415, 31/43;* C07D *499/80*
U.S. Cl. 424—250 7 Claims

1. A β-lactam compound of the formula



in which

A is hydrogen or methoxy,

B is phenyl; phenyl substituted by at least one of hydroxyl, halogen, methoxy, —CN and $CH_3—SO_2—$; thienyl; cyclohexenyl; 1,4-cyclohexadien-1-yl; or furyl;

E is oxygen or sulphur;

n is 1 or 2,

X is lower alkyl, trifluoromethyl, lower alkyl sulfonyl or lower alkyl thio, and

m is 0,1 or 2,

or a pharmaceutically acceptable salt thereof.

5. An antibacterial composition containing as an active ingredient an antibacterially effective amount of a compound according to claim 1 in admixture with a solid or liquid diluent.

4,208,413

N-PYRAZINECARBONYL-N'-ALKOXYCARBONYL AND N',N''-BIS(ALKOXYCARBONYL)GUANIDINES AND PROCESSES FOR PREPARING SAME

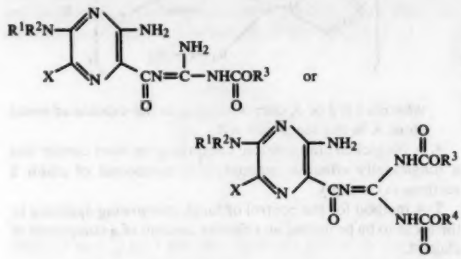
Edward J. Cragoe, Jr., Lansdale, and Otto W. Woltersdorf, Jr., Chalfont, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 774,359, Mar. 4, 1977, abandoned. This application Dec. 4, 1978, Ser. No. 966,532

Int. Cl.[2] A61K *31/495*

U.S. Cl. 424—250 **8 Claims**

1. A compound of the formula:



or

wherein

R^1 is hydrogen, lower alkyl having from 1 to 5 carbon atoms, cycloalkyl having from 3 to 6 carbon atoms, lower alkenyl having from 2 to 3 carbon atoms;

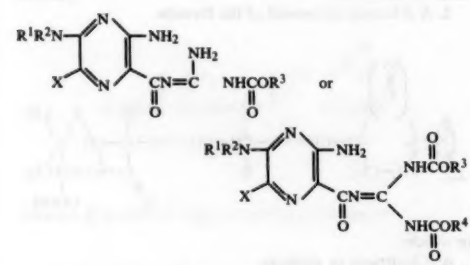
R^2 is hydrogen, lower alkyl having 1 to 5 carbon atoms;

R^1 and R^2 can be joined to form with the nitrogen atom to which they are attached a heterocyclic ring having 3 to 6 carbon atoms therein;

R^3 and R^4 are lower alkyl having from 1 to 5 carbon atoms; cycloalkyl having from 3 to 6 nuclear carbon atoms, alkenyl having 2 to 5 carbon atoms, aralkyl wherein the alkyl portion has 1 to 3 carbon atoms and alkoxyalkyl wherein the alkyl portions have 1 to 5 carbon atoms;

X is halogen; and the pharmaceutically acceptable non-toxic acid addition salts thereof.

5. A method of treating edema and/or hypertension which comprises administering to a patient a pharmacologically acceptable dose of a compound of the formula;



or

wherein

R^1 is hydrogen;

lower alkyl having from 1 to 5 carbon atoms, cycloalkyl having from 3 to 6 carbon atoms, lower alkenyl having from 2 to 3 carbon atoms;

R^2 is hydrogen,

lower alkyl having 1 to 5 carbon atoms;

R^1 and R^2 can be joined to form with the nitrogen atom to which they are attached a heterocyclic ring having 3 to 6 carbon atoms therein;

R^3 and R^4 are lower alkyl having from 1 to 5 carbon atoms; cycloalkyl having from 3 to 6 nuclear carbon atoms, alkenyl having 2 to 5 carbon atoms, aralkyl wherein the alkyl portion has 1 to 3 carbon atoms and alkoxyalkyl wherein the alkyl portions have 1 to 5 carbon atoms;

X is halogen; and the pharmaceutically acceptable non-toxic acid addition salts thereof.

4,208,414

VINBLASTINE IN RHEUMATOID ARTHRITIS

Michael R. Schinitsky, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 912,672, Jun. 5, 1978, abandoned. This application May 14, 1979, Ser. No. 39,078

Int. Cl.[2] A61K *31/475*

U.S. Cl. 424—262 **13 Claims**

1. A method of treating rheumatoid arthritis in mammals which comprises administering to a mammalian subject suffering from rheumatoid arthritis and in need of treatment, an anti-arthritically-effective dosage of a vinca-derived oncolytic agent from the group consisting of vinblastine, vindesine, vincristine, 1-4'-deoxyleurosidine, 4'-deoxyleurosidine, 4-desacetyl VLB 3''-(β-chloroethyl)-3-spiro-5''-oxazolidine-2'',4''-dione and 4-desacetyl VLB 3''-methyl-3-spiro-5''-oxazolidine-2'',4''-dione.

4,208,415

4-[2-(2-SUBSTITUTED PHENYL)ETHENYL]-N-ALKENYL OR ALKINYL SUBSTITUTED 1,2,3,6-TETRAHYDROPYRIDINES

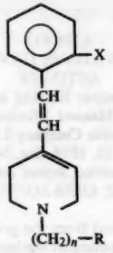
Joseph E. Sundeen, Yardley, Pa., and Frederick P. Hauck, Bridgewater, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Feb. 6, 1978, Ser. No. 875,276

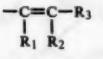
Int. Cl.[2] A61K *31/44*; **C07D** *211/70*

U.S. Cl. 424—263 **8 Claims**

1. A pharmaceutical composition useful for treating gastric ulcers comprising a pharmaceutically acceptable carrier and a compound or mixture of compounds of the formula



wherein X is straight or branched chain lower alkoxy of 1 to 4 carbons, Cl, Br, or F; R is



or —C≡C—R_4; R_1, R_2, R_3 and R_4 are independently selected from the group consisting of hydrogen and methyl; n is an integer from 1 to 3 provided that when n is 3 at least two of R_1, R_2 and R_3 are hydrogen and R_4 is hydrogen, and that when n is 2 at least one of R_1, R_2 and R_3 is hydrogen; and a pharmaceutically acceptable acid addition salt thereof.

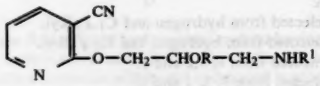
4,208,416

N-ARALKYL CONTAINING CYANOPYRIDINES

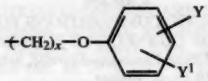
John J. Baldwin, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 27, 1978, Ser. No. 919,646
Int. Cl.[2] C07D *213/57;* A61K *31/44*
U.S. Cl. 424—263 9 Claims

1. A compound having the formula

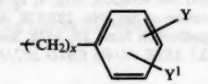


and pharmaceutically acceptable salts thereof wherein
R is H and
R^1 is a phenyllinearalkyl group having the formula



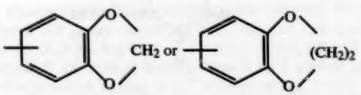
(a)

or



(b)

wherein
X is 1 to 4 and
Y and Y^1, when separated, are H, —OCH_3, OH or halo and when joined, form



with the phenyl group.

9. Pharmaceutical composition for treating hypertension containing an effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier or diluent.

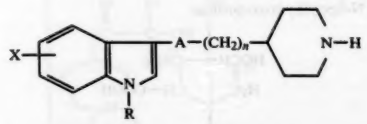
4,208,417

INDOLE DERIVATIVES AND THEIR USE AS ANXIOLYTICS

André V. Uzan, Paris, France, assignor to Pharmindustrie, Gennevilliers, France

Filed Jun. 29, 1978, Ser. No. 920,598
Int. Cl.[2] A61K *31/445*
U.S. Cl. 424—267 10 Claims

1. A method of treating a mammal afflicted with an anxiety state comprising administering to said mammal a therapeutically effective amount of a composition comprising a compound of the formula:



where R is hydrogen, an alkyl group having 1 to 4 carbon atoms or an aralkyl group of which the alkyl contains 1 to 2 carbon atoms; X is hydrogen, alkyl, alkoxy or alkylthio, the alkyl of each containing from 1 to 4 carbon atoms, or a halogen atom; A is —CO— or —CH_2—; or n is 1 to 2; and a pharmaceutically acceptable salt thereof; in a pharmaceutically acceptable carrier therefor.

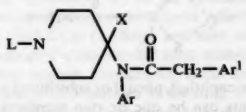
4,208,418

N-ARYL-N-(1-ALKYL-4-PIPERIDINYL)ARYLACETAMIDES

Stefan Sanczuk, Vosselaar, and Hubert K. Fr. Hermans, Gierle, both of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

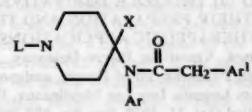
Division of Ser. No. 795,669, May 11, 1977, Pat. No. 4,126,689, which is a continuation-in-part of Ser. No. 713,756, Aug. 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 615,131, Sep. 23, 1975, abandoned, Ser. No. 700,351, Jun. 28, 1976, abandoned, Ser. No. 700,352, Jun. 28, 1976, abandoned, Ser. No. 700,635, Jun. 28, 1976, abandoned, Ser. No. 700,636, Jun. 28, 1976, abandoned, Ser. No. 700,637, Jun. 28, 1976, abandoned, Ser. No. 700,638, Jun. 28, 1976, abandoned, and Ser. No. 700,694, Jun. 28, 1976, abandoned. This application Jul. 13, 1978, Ser. No. 924,535
Int. Cl.[2] C07D *211/58;* A61K *31/445*
U.S. Cl. 424—267 6 Claims

1. A chemical compound selected from the group consisting of an N-aryl-N-(4-piperidinyl)arylacetamide having the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein:
L is cycloalkyllower alkyl, said cycloalkyl having 3 to 6 carbon atoms;
Ar is a member selected from the group consisting of phenyl, mono- and di-substituted phenyl, wherein each substituent in said mono- and di-substituted phenyl is independently selected from the group consisting of halo and lower alkyl;
Ar^1 is a member selected from the group consisting of phenyl, mono- and di-substituted phenyl, wherein each substituent in said mono- and di-substituted phenyl is independently selected from the group consisting of halo, lower alkyl, hydroxy and lower alkyloxy; and
X is hydrogen.

5. A method of treating cardiac arrhythmia which comprises the systemic administration to warm-blooded animals of an effective anti-arrhythmic amount of a chemical compound selected from the group consisting of an N-aryl-N-(4-piperidinyl)arylacetamide having the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein:
L is cycloalkyllower alkyl, said cycloalkyl having 3 to 6 carbon atoms;
Ar is a member selected from the group consisting of phenyl, mono- and di-substituted phenyl, wherein each substituent in said mono- and di-substituted phenyl is independently selected from the group consisting of halo and lower alkyl;
Ar^1 is a member selected from the group consisting of phenyl, mono- and di-substituted phenyl, wherein each substituent in said mono- and di-substituted phenyl is

independently selected from the group consisting of halo, lower alkyl, hydroxy and lower alkyloxy; and
X is hydrogen.

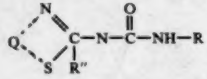
4,208,419

N-HETEROCYCLIC UREAS AS IMMUNE REGULANTS

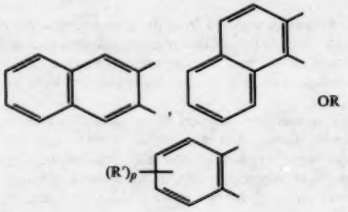
Charles J. Paget, Indianapolis, and John L. Sands, W. Lafayette, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 843,775, Oct. 20, 1977, Pat. No. 4,153,709, which is a division of Ser. No. 651,322, Jan. 21, 1976, Pat. No. 4,088,768, which is a continuation-in-part of Ser. No. 574,997, May 6, 1975, abandoned, which is a division of Ser. No. 398,607, Sep. 19, 1973, abandoned, which is a continuation-in-part of Ser. No. 185,823, Oct. 1, 1971, abandoned, which is a continuation-in-part of Ser. No. 794,756, Jan. 28, 1969, abandoned. This application Nov. 30, 1978, Ser. No. 965,357
Int. Cl.[2] A61K *31/425*
U.S. Cl. 424—270 **4 Claims**

1. The method for regulating the immune response which comprises administering to a mammal suffering from an immune reaction a dose of from 0.1 to 500 mg/kg of mammalian body weight of a compound of the formula:



wherein R is α-naphthyl, phenyl or substituted phenyl wherein said substituents can be one or two members of the group consisting of halo, C_1–C_3 alkoxy, C_1–C_3 alkyl or CF_3, R″ is H or CH_3 and Q is



wherein R′ in each of its "p" occurrence independently represents halo, CF_3, carb-C_1–C_3-alkoxy, nitro, C_1–C_3 alkyl or C_1–C_3 alkoxy and p is 0–2.

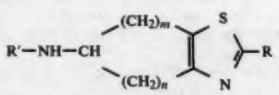
4,208,420

NEW BENZO [d] THIAZOLE DERIVATIVES, PROCESS FOR THEIR PREPARATION AND THEIR THERAPEUTIC APPLICATIONS

Jacques Maillard, Versailles; Pierre Delaunay, Herblay, and Jacky Legeai, Palaiseau, all of France, assignors to Laboratoires Jacques Logeais, Issy Les Moulineaux, France

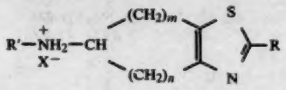
Filed Oct. 11, 1978, Ser. No. 950,394
Claims priority, application France, Oct. 24, 1977, 77 31891
Int. Cl.[2] A61K *31/38*; C07D *277/60*
U.S. Cl. 424—270 **5 Claims**

1. A compound selected from the group consisting of compounds of the formula:



(I)

and their pharmaceutically acceptable acid addition salts of the formula:



(II)

in which:
R is selected from hydrogen and C_{1-4} alkyl,
R′ is selected from hydrogen and C_{1-4} alkyl,
m is selected from 0, 1,2 and 3;
n is selected from 3, 2, 1 and 0,
the sum m+n being always equal to 3, and
X^- represents an anion formed by a pharmaceutically acceptable acid.

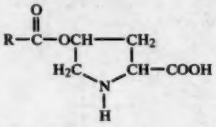
4,208,421

THERAPEUTIC COMPOSITIONS FOR THE TREATMENT OF CONNECTIVE TISSUES DISEASES

Jean Morelle, and Eliane Lauzanne-Morelle, both of 170 avenue Parmentier, 75010 Paris, France

Continuation of Ser. No. 493,503, Aug. 1, 1974, abandoned, which is a continuation of Ser. No. 283,828, Aug. 25, 1972, abandoned. This application Mar. 27, 1978, Ser. No. 890,906
Int. Cl.[2] A61K *31/40*; C07D *207/12*
U.S. Cl. 424—274 **7 Claims**

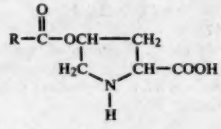
1. A composition of matter consisting essentially of O-lipoyl-hydroxyproline of the formula



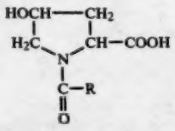
wherein R is a lypoyl hydrocarbon radical having from 6 to 30 carbon atoms.

4. A method for the treatment of algias and inflammations caused by biochemical unbalance of the connective tissues of humans comprising applying topically to the skin from two to three times per day a therapeutic composition consisting essentially of a pharmaceutically acceptable carrier and incorporated in said carrier an amount within the range from 5% to 10% by weight of the finished composition of a compound selected from the group consisting of:

(a) O-lipoylhydroxyproline

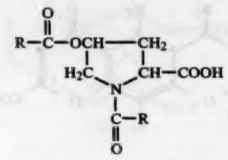


(b) N-lipoylhydroxyproline



and

(c) O,N-dilipoylhydroxyproline



wherein R is a lipoyl hydrocarbon radical having from 6 to 30 carbon atoms and wherein the carrier for said compound is a carrier in which said compound is soluble, said carrier comprising at least one polar liquid and at least one non-polar liquid, said polar and non-polar liquids being compatible.

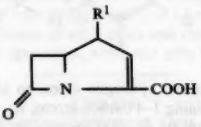
4,208,422

1-SUBSTITUTED-PEN-2-EM-3-CARBOXYLIC ACIDS

Burton G. Christensen, Metuchen, and David H. Shih, Edison, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 24, 1978, Ser. No. 954,273
Int. Cl.[2] C07D *487/04;* A61K *31/40*
U.S. Cl. 424—274 3 Claims

1. A compound having the formula:



and its pharmaceutically acceptable salts; wherein R^1 is selected from the group consisting of substituted and unsubstituted loweralkyl having from 1–6 carbon atoms, phenyl, phenylloweralkyl, cycloalkyl having from 3 to 6 carbon atoms, and cycloalkylalkyl having 4 to 7 carbon atoms in the chain and 3–6 carbon atoms in the ring; wherein said substituents on R^1 are selected from the group consisting of halogen, hydroxyl, amino, mono-, di- and trialkylamino wherein the alkyl moiety has 1–6 carbon atoms, alkoxyl, azido, cyano, carboxyl, carbamoyl amidino, guanidino and ureido.

3. An antibiotic pharmaceutical composition comprising a therapeutically effective amount of a compound according to claim 1 and a pharmaceutical carrier therefor.

4,208,423

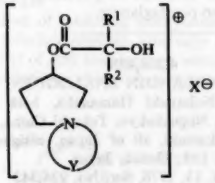
ANTICHOLINERGIC BRONCHODILATORS

Jurg R. Pfister, Los Altos, Calif., assignor to Syntex Inc., Palo Alto, Calif.

Filed Nov. 24, 1978, Ser. No. 963,258
Int. Cl.[2] A61K *31/40;* C07D *207/12*
U.S. Cl. 424—274 7 Claims

1. Compounds of the formula

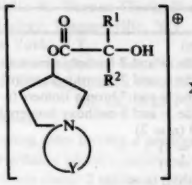
I



where R^1 and R^2 are the same or different and are C_1 to C_6 alkyl; C_5 or C_6 cycloalkyl; C_5 or C_6 cycloalkenyl; phenyl optionally substituted with a substituent selected from the group C_1 to C_6 alkyl, C_1 to C_6 alkoxy and halo; or monovalent heterocyclic radical of aromatic character containing a heteratom selected from oxygen, nitrogen and sulfur and, in addition to the heteroatom, 4 or 5 carbons in the ring; Y is the radical selected from $(CH_2)_n$, and n is the integer 4; and X is selected from the group nitrate, methanesulfonate, benzenesulfonate, p-toluenesulfonate, chloride, bromide and iodide.

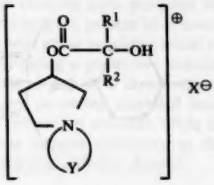
6. An anticholinergic composition which comprises a pharmaceutical carrier and an anti-cholinergic effective amount of at least one compound selected from the group represented by the formula

I



where R^1 and R^2 are the same or different and are C_1 to C_6 alkyl; C_5 or C_6 cycloalkyl; C_5 or C_6 cycloalkenyl; phenyl optionally substituted with a substituent selected from the group C_1 to C_6 alkyl, C_1 to C_6 alkoxy and halo; or; monovalent heterocyclic radical of aromatic character containing a heteratom selected from oxygen, nitrogen and sulfur and, in addition to the heteroatom, 4 or 5 carbons in the ring; Y is the radical selected from $(CH_2)_n$ and n is the integer 4; and X is selected from the group methanesulfonate, benzenesulfonate, p-toluenesulfonate, nitrate, chloride, bromide and iodide.

7. A method for effecting bronchodilation in mammals which comprises administering to said mammals a bronchodilating effective amount of compounds of the formula



where R^1 and R^2 are the same or different and are C_1 to C_6 alkyl; C_5 or C_6 cycloalkyl; C_5 or C_6 cycloalkenyl; phenyl optionally substituted with a substituent selected from the group C_1 to C_6 alkyl, C_1 to C_6 alkoxy and halo; or monovalent heterocyclic radical of aromatic character containing a heteroatom selected from oxygen, nitrogen and sulfur, and in addition to the heteroatom, 4 or 5 carbons in the ring; Y is the radical selected from $(CH_2)_n$ and n is the integer 4; and X is selected from the group methanesulfonate, benzenesulfonate, p-toluenesulfonate, nitrate, chloride, bromide and iodide.

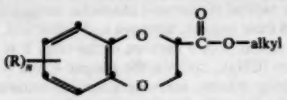
4,208,424

LIPOGENESIS INHIBITION BY CERTAIN ESTERS OF SUBSTITUTED BENZODIOXINCARBOXYLIC ACIDS

John B. Carr, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 26, 1979, Ser. No. 33,636
Int. Cl.[2] A61K *31/335*
U.S. Cl. 424—278 1 Claim

1. A method of inhibiting lipogenesis in a mammal, which comprises administering, to a mammal in need of such treatment, orally or parenterally a lipogenesis inhibiting amount of a compound of the formula



wherein "alkyl" is alkyl of from one to four carbon atoms, and the substituent moiety or moieties, R, are as follows, the number(s) preceding the moieties indicating the position of each of said moieties on the ring:

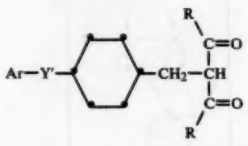
Species No.	$(R)_n$
1	H (n = zero)
2	mixture of the 6- and 7-methyl isomers (n = 1)
3	mixture of the 6- and 7-fluoro isomers (n = 1)
4	mixture of the 6- and 7-bromo isomers (n = 1)
5	mixture of the 5- and 8-methoxy isomers (n = 1)
6	6,7-dimethyl (n = 2)
7	6-phenyl (n = 1)
8	7-phenyl (n = 1)
9	7-(hydroxyethyl) (n = 1)
10	mixture of the 6- and 7-methoxy isomers (n = 1).

4,208,425
NOVEL DIKETONES

Guy D. Diana, Stephentown, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 830,470, Sep. 6, 1977, Pat. No. 4,153,719. This application Oct. 10, 1978, Ser. No. 949,778
Int. Cl.[2] C07C 49/76; A01N 9/28
U.S. Cl. 424—282 6 Claims

1. A compound of the formula



wherein:

Ar is phenyl or phenyl substituted by 3,4-methylenedioxy or from one to two substituents selected from the group consisting of hydroxy, alkoxy of 1–3 carbon atoms and halogen;

Y′ is selected from the group consisting of CH_2, CH_2CH_2 and OCH_2;

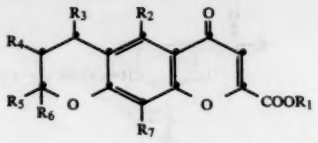
and R is alkyl of 1 to 4 carbon atoms.

4,208,426
PYRANOCHROMONE DERIVATIVES AND THERAPEUTIC COMPOSITION COMPRISING SAME FOR TREATMENT OF ALLERGIC DISEASES

Norio Minami, Kamakura; Shizumasa Kijima; Satoshi Katayama, both of Tokyo, and Hiroshi Shionoya, Tokorozawa, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

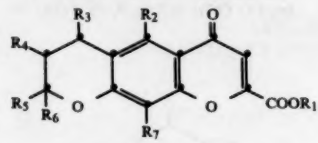
Filed Jul. 24, 1978, Ser. No. 927,044
Claims priority, application Japan, Jul. 28, 1977, 52-89765
Int. Cl.[2] A61K 31/35; C07D 311/78
U.S. Cl. 424—283 28 Claims

1. A pyranochromone derivative having the general formula:



wherein R_1 represents hydrogen atom, an alkali metal or an alkyl group containing 1–4 carbon atoms; R_2, R_3 and R_4 represent hydrogen atom or an alkyl group containing 1–4 carbon atoms respectively, provided that both R_3 and R_4 are not hydrogen atom at the same time; R_5 and R_6 represent an alkyl group containing 1–4 carbon atoms respectively; and R_7 represents hydrogen atom, hydroxyl group, an alkyl group containing 1–4 carbon atoms or an alkoxyl group containing 1–4 carbon atoms.

22. A therapeutic composition which comprises an anti-allergically effective amount of a pyranochromone derivative having the general formula:



wherein R_1 represents hydrogen atom, an alkali metal or an alkyl group containing 1–4 carbon atoms; R_2, R_3 and R_4 represent hydrogen atom or an alkyl group containing 1–4 carbon atoms respectively, provided that both R_3 and R_4 are not hydrogen atom at the same time; R_5 and R_6 represent an alkyl group containing 1–4 carbon atoms respectively; and R_7 represents hydrogen atom, hydroxyl group, an alkyl group containing 1–4 carbon atoms or an alkoxy group containing 1–4 carbon atoms in admixture with an orally acceptable pharmaceutical carrier therefor.

4,208,427
PREVENTING ENTEROPOOLING INDUCED DIARRHEA BY PROSTACYCLIN OR 11-OXO-PROSTAGLANDIN ADMINISTRATION

Andre Robert, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 905,330, May 12, 1978, abandoned. This application Jan. 2, 1979, Ser. No. 614
Int. Cl.[2] A61K 31/19, 31/34, 31/215, 31/275
U.S. Cl. 424—285 10 Claims

1. A method of preventing or ameliorating diarrhea in a mammal susceptible to diarrhea development by virtue of exposure to or challenge with an enteropooling inducer, or eliminating or reducing diarrhea in a mammal suffering therefrom, which comprises:

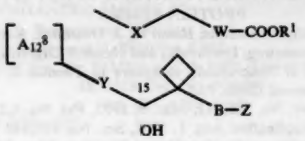
administering an anti-enteropooling systemic dose of a prostacyclin or 11-oxo-prostaglandin.

4,208,428
PROSTAGLANDIN ANALOGUES

Masayasu Kurono; Nobuyuki Hamanaka, both of Osaka; Shigeru Sakuyama, Nagaokakyo; Takeshi Chiba, and Hisao Nakai, both of Takatsuki, all of Japan, assignors to Ono Pharmaceutical Co. Ltd., Osaka, Japan

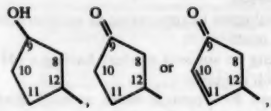
Filed Jul. 13, 1978, Ser. No. 924,343
Claims priority, application Japan, Jul. 14, 1977, 52-83558
Int. Cl.[2] C07C 177/00; A61K 31/19, 31/215
U.S. Cl. 424—305 16 Claims

1. A prostaglandin analogue of the general formula:



VII

wherein A represents a grouping of the formula:



VIIIA VIIIB IV

B represents a straight- or branched-chain alkylene group containing from 1 to 7 carbon atoms, X represents ethylene or cis-vinylene, Y represents ethylene or trans-vinylene, W represents ethylene or trans-vinylene, Z represents a halogen atom, and R^1 represents a hydrogen atom or a straight- or branched-chain alkyl group containing from 1 to 12 carbon atoms and cyclodextrin clathrates of such acids and esters and, when R^1 represents a hydrogen atom, non-toxic salts thereof.

4,208,429

COAT CONDITIONING METHOD AND COMPOSITION FOR DOGS AND CATS

Charles E. O. Fraser, 79 Marlborough Rd., Southborough, Mass. 01772

Continuation-in-part of Ser. No. 529,021, Dec. 3, 1974, abandoned. This application Apr. 28, 1975, Ser. No. 572,082

Int. Cl.² A61K *31/23*

U.S. Cl. 424—312 **5 Claims**

1. The method of improving the condition of the coat of a dog or cat, in need of improvement, comprising feeding the dog or cat with safflower oil in an amount effective to improve its coat condition, said condition resulting from a lack of dietary elements or excessive drying of the coat, with oil of cloves added to said safflower oil in an amount effective to enhance its palatability.

4,208,430

PHARMACEUTICAL COMPOSITIONS AND METHOD OF INHIBITING PHENYLETHANOLAMINE N-METHYLTRANSFERASE

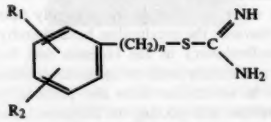
William E. Bondinell, Cherry Hill, N.J., and Robert G. Pendleton, Philadelphia, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Mar. 15, 1979, Ser. No. 20,770

Int. Cl.² A61K *31/155*

U.S. Cl. 424—326 **9 Claims**

1. A method of inhibiting phenylethanolamine N-methyltransferase which comprises internally administering to an animal in need of said treatment an amount sufficient to produce said inhibition a chemical compound of the formula:



in which:

R_1 is chloro, bromo, fluoro, iodo, trifluoromethyl, or hydrogen; R_2 is chloro, bromo, fluoro, iodo, trifluoromethyl, nitro, or hydrogen; and n is a positive integer from 1 to 3, or a pharmaceutically acceptable acid addition salt thereof.

4,208,431

LONG-LASTING CHEWING GUM HAVING GOOD PROCESSIBILITY AND METHOD

Dominick R. Friello, Danbury, Conn.; Frank Witzel, Spring Valley, N.Y.; K. Warren Clark, Brewster, N.Y., and Donald A. M. Mackay, Pleasantville, N.Y., assignors to Life Savers, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 903,342, May 5, 1978, abandoned. This application Oct. 20, 1978, Ser. No. 953,151

Int. Cl.² A23G *3/30*

U.S. Cl. 426—3 **31 Claims**

1. A chewing gum having a prolonged sweet taste comprising a water-soluble phase comprised of aqueous softener in an amount of from about 2 to about 30% by weight of the chewing gum, a first sweetener in particulate form in an amount from about 20 to about 60% by weight of the chewing gum, an optionally hydrogenated starch hydrolysate in an amount of from about 0 to about 20% by weight of the chewing gum dispersed throughout the aqueous softener; and a relatively water-insoluble phase comprised of a plurality of separate and distinct masses suspended in and dispersed throughout the water-soluble phase, each of said masses comprising gum base, a second sweetener in particulate form, and optionally hydrogenated starch hydrolysate enveloped by said gum base, said gum base being present in an amount of from about 8 to about 25% by weight of the chewing gum, said second sweetener being present in an amount of from about 20 to about 45% by weight of the chewing gum, said hydrogenated starch hydrolysate being present in an amount of from about 0 to about 15% by weight of the chewing gum, provided that the hydrogenated starch hydrolysate is present in at least one of said phases, the water-soluble phase providing initial sweetness impact, the gum base providing a protective vehicle for the second sweetener to control and slow down release of the second sweetener, thereby providing extended sweetness after the initial sweetness impact has subsided, while the hydrogenated starch hydrolysate imparts cohesivity to the chewing gum thereby facilitating processibility thereof.

4,208,432

POWDERY ANTI-STICK AGENT FOR KEEPING THE STICKY SURFACE OF CANDY OR CHEWING GUM NON-ADHESIVE

Ken-Ichi Noborio, Nishinomiya, and Masao Maeda, Itami, both of Japan, assignors to Kanebo Foods, Ltd., Tokyo, Japan

Filed Dec. 28, 1977, Ser. No. 865,336

Claims priority, application Japan, Jun. 13, 1977, 52-70242

Int. Cl.² A23G *3/00, 3/30*

U.S. Cl. 426—4 **8 Claims**

1. A solid candy or chewing gum having the outer surface coated with an effective amount of a powdery anti-stick agent to keep the stick surface of the candy or chewing gum non-sticking; said powdery anti-stick agent comprising fine particles of a base compound (1) selected from the group consisting of α-lactose, β-lactose, calcium carbonate and mixtures thereof coated with a coating compound (2) selected from the group consisting of solid monoglycerides of a saturated fatty acid having 12 to 18 carbon atoms and mono- or diacetylation products of said saturated fatty acid monoglycerides; said coating amount present in about 2 to 5% by weight based on the weight of the base compound (1).

4,208,433

METHOD FOR THE ADSORPTION OF SOLIDS BY WHOLE SEEDS

Harold N. Barham, Jr., 3025 46th St., Lubbock, Tex. 79413; Harold N. Barham, deceased, late of Lubbock, Tex., and by Doris Barham, heir, 3025 46th St., Lubbock, Tex. 79413

Continuation-in-part of Ser. No. 532,757, Dec. 16, 1974, abandoned, which is a continuation of Ser. No. 287,105, Sep. 7, 1972, abandoned. This application May 19, 1978, Ser. No. 907,834

Int. Cl.[2] A23K *1/22*

U.S. Cl. 426—69 42 Claims

1. A method for treating whole seeds to render the internal structures thereof more available for use which comprises:

(a) contacting the whole seeds with a synergistic mixture of a fine solid material and an oleaginous vehicle which alone are not significantly sorbed into the seeds but in mutual presence result in the relatively rapid sorption of the components by the seeds, and

(b) maintaining the contact until the synergistic mixture has been sorbed by the seeds.

9. The product produced by the method of claim 1.

29. A method for eliminating dust associated with whole seeds to reduce the hazards due to the presence of the dust during handling and storage of the whole seeds which comprises:

(a) contacting the whole seeds and concomitant dust with an oleaginous vehicle to form a synergistic mixture of components of dust and oleaginous vehicle which alone are not significantly sorbed into the seeds but in mutual presence result in the relatively rapid sorption of the components by the seeds and

(b) maintaining the contact until the formed synergistic mixture of oleaginous vehicle and dust has been sorbed by the seeds.

4,208,434

COLOR STABLE FOOD CONTAINING ANTHOCYANIC PIGMENTS AND BIO-AVAILABLE VITAMIN C AND PROCESS FOR ITS PRODUCTION

Guillermo A. Iacobucci, and James G. Sweeny, both of Atlanta, Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Continuation-in-part of Ser. No. 923,523, Jul. 11, 1978, abandoned. This application Apr. 27, 1979, Ser. No. 34,065

Int. Cl.[2] A23L *1/30*

U.S. Cl. 426—72 28 Claims

1. An improved process for formulating a color stable food containing bio-available vitamin C and an anthocyanic pigment, of the type wherein said anthocyanic pigment and said bio-available vitamin C are combined with a food base prior to consumption, the improvement comprising providing said bio-available vitamin C in the form of ascorbic acid, or a soluble, non-toxic salt thereof, blockingly substituted at at least one enolic OH function.

4,208,435

CHILE RELLENOS AND PROCESS OF MAKING THE SAME

Betty J. Wood, P.O. Box 910, Norman, Okla. 73070

Continuation of Ser. No. 821,143, Aug. 2, 1977, abandoned, which is a continuation of Ser. No. 720,600, Sep. 7, 1976, abandoned. This application Sep. 11, 1978, Ser. No. 941,250

Int. Cl.[2] A23L *1/212*

U.S. Cl. 426—92 3 Claims

1. A method of forming an improved Chile Relleno which includes the step of heating a fresh green pepper in hot oil to cook the pepper and loosen the peel or skin, removing the peel, forming a cavity in the peeled pepper, and inserting a stuffing mix in the cavity, freezing the stuffed pepper product, rolling the same in flour, dipping the flour coated product in a batter consisting essentially of buttermilk, rolling the same in cracker meal, freezing and packing.

4,208,436

MEAT ANALOGUES CONTAINING DRY SPUN PROTEIN FIBERS

Johannes Visser, Maassluis; Raoul H. J. Oosthoek, Rotterdam; Jan W. Groeneweg, Dordrecht, and Hendrik Dijkstra, Vlaardingen, all of Netherlands, assignors to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.

Division of Ser. No. 775,772, Mar. 9, 1977, Pat. No. 4,118,520. This application Aug. 1, 1978, Ser. No. 929,918

Claims priority, application United Kingdom, Mar. 26, 1976, 12223/76

Int. Cl.[2] A23J *3/02*

U.S. Cl. 426—104 5 Claims

1. Meat analogues incorporating as structure imparting materials fibers made by:

(1) preparing an aqueous mixture having a pH from 5.0 to 6.6, which contains:

(a) at least 30% protein based on total mixture weight, which protein consists of casein in a proportion varying from 90 to 30% and at least one heat-settable protein in a proportion varying from 10 to 70%, based on the total weight of the protein;

(b) at least 0.1 mM calcium ions per gram of casein; and

(c) at least 0.04 mM orthophosphate ions per gram of casein,

(2) spinning such mixtures, at a temperature ranging from room temperature up to a temperature just below the mixture's gelling point, through the orifices of a spinneret into a gaseous medium, to obtain fibers,

(3) drying the fibers to a moisture content of less than 11%, and

(4) rehydrating the fiber in water containing calcium ions at a temperature above the heat-setting temperature of the heat-settable protein.

4,208,437

METHOD FOR MAKING CONFECTIONERY LOLLIPOPS

Henricus A. J. M. Derckx, 31 St. Antoniusstraat, Weert, Netherlands

Division of Ser. No. 852,002, Nov. 15, 1977, Pat. No. 4,168,139. This application Aug. 1, 1978, Ser. No. 930,122

Claims priority, application Netherlands, Nov. 25, 1976, 7613131

Int. Cl.[2] A23G *3/00, 3/12*

U.S. Cl. 426—134 3 Claims

1. A method of making confectionery lollipops, which comprises inserting small sticks into respective recesses in a rotary production head; delivering confectionery in the form of a strand to a cutting position; causing a cutting stamp mounted to the cutting position to execute repeated up and down movements thereby to cut pieces of confectionery from the strand upon successive downward movements and to transfer the pieces of confectionery to respective recesses of the production head, whereby the pieces of confectionery are provided with respective partially-inserted sticks and are prepressed; rotating the production head to bring the recesses containing the pieces of confectionery in succession from the cutting position to a pressing position and, upon such rotation, inserting the sticks further into the pieces of confectionery; causing a pressing stamp mounted at the pressing position to execute repeated to and fro movements with respect to the production head and to enter the recesses respectively upon successive movements towards the production head thereby to press the pieces of confectionery in the recesses and form lollipops; rotating the production head to bring the recesses containing the lollipops in succession from the pressing position to a discharge position; and ejecting the lollipops from the recesses at the discharge position.

4,208,438

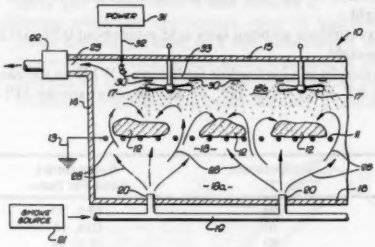
ION ENHANCED SMOKE TREATMENT OF EDIBLES

Donald G. Saurenman, Whittier, Calif., assignor to Consan Pacific Incorporated, Whittier, Calif.

Division of Ser. No. 893,003, Apr. 3, 1978. This application Dec. 18, 1978, Ser. No. 970,863

Int. Cl.[2] A23L *3/32*

U.S. Cl. 426—235 **6 Claims**



1. In the method of enhancing smoke treatment of edibles, the steps that include

(a) dispersing smoke particles in a zone wherein the edibles are located, said dispersing being effected primarily by smoke flow into a lower region of said zone, there being means to exhaust the smoke from an upper region of said zone, and inducing smoke particle flow to contact exposed undersides of the edibles,

(b) applying high voltage to multiple tips exposed to the smoke flow to ionize smoke particle causing smoke particles to be attracted onto the upper sides of the edibles,

(c) and employing metallic structure to locally contact undersides of the edibles, the said structure being at an electrical potential different from said high voltage to impart said potential to the edibles to cause the smoke particles to be attracted to the uppersides of the edibles, and while maintaining substantial extents of said undersides exposed to the smoke,

(d) and, additionally, flowing the smoke particles from a region between said tips to which voltage is applied and said metallic structure at said potential, and in a direction and at a rate sufficient to enhance smoke particle flow onto the edibles.

4,208,439

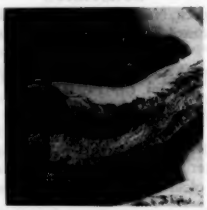
PREPARATION OF PASTA

Jau Y. Hsu, Brookfield, Conn., assignor to Societe d'Assistance Technique Pour Produits Nestle S.A., Lausanne, Switzerland

Filed Oct. 25, 1977, Ser. No. 844,579

Int. Cl.[2] A21D *6/00*; A23L *1/16*

U.S. Cl. 426—242 **24 Claims**



1. Process for preparing readily rehydratable dry pasta, which comprises providing a sheet of gelatinized cereal flour dough, the sheeted dough having a moisture content of at least about 27% to about 40% or more by weight prior to gelatinization, expanding the sheeted dough to impart a high degree of essentially uniform porous structure to the interior of the sheet, dividing the expanded sheet into pieces of desired shapes, thereby exposing the porous interior of each said shaped piece along the resultant perimeter surfaces where the said piece was divided from the said sheet, and drying the shaped pieces.

4,208,440

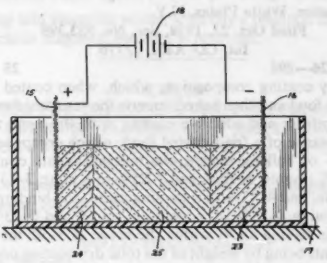
ELECTRICALLY SEPARATING A FOOD PASTE

Edward D. Schmidt, 5073 Nine Mile Creek Cir., Minneapolis, Minn. 55437

Continuation-in-part of Ser. No. 907,945, May 22, 1978, abandoned. This application Apr. 25, 1979, Ser. No. 33,167

Int. Cl.[2] A23L *3/32*

U.S. Cl. 426—244 **37 Claims**



33. A method of treating a powdered food ingredient such as soy flour, corn flour, dried whey, cocoa powder, field pea flour or field pea powder comprising blending the food ingredient with a quantity of water to form a paste of a sufficiently high viscosity to be substantially entirely retained horizontally between spaced electrically conductive vertical screens in a non-electrically conductive container, dispensing the paste between the screens in the container, and applying a potential difference to the screens to pass a D.C. current through the paste for a sufficient period of time to separate the paste into three fractions that are of substantially different pH's from one another.

4,208,441

PROCESS FOR COOKING DOUGH PRODUCTS

Jack D. Westover, Burnsville, Minn., assignor to The Pillsbury Company

Filed Mar. 1, 1978, Ser. No. 882,502

Int. Cl.[2] A21D *8/06*

U.S. Cl. 426—293 **9 Claims**

1. A continuous process for cooking dough product comprising mixing together flour, water and leavening to form a dough; forming the dough into a plurality of self-supporting pliant dough sheets of predetermined width and breadth, each sheet having upper and lower surfaces and a peripheral edge that is closed upon itself and having enough internal strength to be lifted, carried or otherwise handled; providing upper and lower endless moving conveyors comprising a plurality of cooking irons connected adjacent one another along the run of said conveyors, the positioning and movement of said conveyors acting to bring each cooking iron of the upper conveyor in turn into a superimposed mated position with a corresponding cooking iron of the lower conveyor, said position being between prior and subsequent positions wherein said upper and lower cooking irons are separated, each pair of cooking irons being of a size adapted to hold the sheet, at least one of the irons having pockets which extend away from the other iron; maintaining the irons at a high enough temperature to cook the dough; applying edible oil to at least one of the dough sheets and the cooking irons prior to closing the irons on a respective dough sheet; depositing each dough sheet in turn on a lower

cooking iron while in separated relationship, the movement of said cooking irons first closing the irons into mating relationship around the dough sheet to thereby heat the dough between them until it expands into the pockets of the irons and is cooked sufficiently to set the dough crumb structure to provide a cooked dough body having a crisp, relatively firm exterior and a soft, moist, bready interior and having blisters corresponding in size and shape to the pockets in the cooking iron, and thereafter separating the irons; and removing the cooked dough sheet.

4,208,442

COMPOSITION FOR USE IN PREPARING A BAKED COATED COMESTIBLE

David N. Evans, Dover; Walter W. Moore, Felton, both of Del., and Jean L. Ng, Sarnia, Canada, assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,399
Int. Cl.[2] A23L *1/176*
U.S. Cl. 426—296 **25 Claims**

1. A dry coating composition, which, when coated onto a moistened fowl and then baked imparts the resultant fowl with a crisp, uniform and adhesive coating with the taste, texture and appearance of a fried coated fowl, which comprises:

60–78% of bulking agents, the bulking agents containing 0–68% crumbs or fines and 7–75% of a flour; 3–13% of a protein; and 4–13% of a binding agent, the binding agent containing 0–13% of a modified starch and 0–13% of a dextrin having a DE within the range of 5–50, the above percents being by weight of the total dry coating composition; the flour, from 5 to 95% by weight of the protein and from 15 to 85% by weight of the binding agent having been mixed together and hydrated followed by drying to form a coating premix, the dry coating composition containing the coating premix at a level of 10 to 78% by weight of the total dry coating composition.

4,208,443

PROCESS FOR RETARDING MOLD IN GRAIN

George M. Kanuch, Duluth, Minn., and Charles H. Staff, Omaha, Nebr., assignors to Fairmont Foods Company, Omaha, Nebr.

Continuation-in-part of Ser. No. 740,956, Nov. 11, 1976, abandoned. This application Jul. 18, 1977, Ser. No. 816,388
Int. Cl.[2] A23B *9/00*; A23L *3/34*
U.S. Cl. 426—331 **27 Claims**

1. A method of extending the storage life of high moisture grain contaminated at least on some surfaces thereof by viable mold spores by retarding spoilage caused by mold and yeast growth, and which is adapted to reduce spoilage due to germination of mold spores, comprising the steps of:

harvesting the grain;

applying a preservative agent consisting essentially of ethyl alcohol to any of the surfaces of said grain subject to contamination with mold spores, without drying the grain after harvest to substantially reduce its moisture content;

said alcohol being applied in an amount from about 0.2 to 5.0 percent of alcohol based on the total weight of the grain; and

storing said grain with the alcohol within a period of time following said alcohol application so as to prevent significant losses of the alcohol through vaporization from the surfaces thereof.

4,208,444

WHIPPABLE TOPPING MIX

Cecilia Gilmore, and Donald E. Miller, both of Strongsville, Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Nov. 30, 1977, Ser. No. 855,879
Int. Cl.[2] A23J *3/02*
U.S. Cl. 426—570 **6 Claims**

1. A whippable fluid topping composition capable of direct use having a caloric content not substantially greater than about 170–180 calories per 100 grams and freeze-thaw stability, for producing a stable whipped topping, comprising on a wet basis

a normally water-dispersible or soluble protein about 1 to 5% by weight

stabilizing gum about 0.20 to 2.2% by weight

sweetener about 15 to 25% by weight

high solids fat about 8 to 10% by weight

ethoxylated mono- and diglyceride about 0.20 to 1.0% by weight

polyoxyethylene sorbitan fatty acid ester about 0.01 to 0.2% by weight

wherein said fat is a high solids fat having a WMP in the range of about 90° F. to about 115° F. and an approximate SFI of about

Temperature, °F.	Approximate Solid-Fat Index
50	69± 10
70	60± 12
80	39 ± 14
92	14 ± 8
100	11 max.

the remainder being essentially water.

4,208,445

FOOD FATS

Derek Cottier, London, and John B. Rossell, Loughton, both of England, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 756,447, Jan. 3, 1977, abandoned, which is a continuation of Ser. No. 686,962, May 14, 1976, abandoned, which is a continuation of Ser. No. 528,367, Nov. 29, 1974, abandoned. This application Jul. 10, 1978, Ser. No. 923,512
Claims priority, application United Kingdom, Dec. 4, 1973, 56166/73
Int. Cl.[2] A23D *5/00*
U.S. Cl. 426—607 **1 Claim**

1. A confectionery fat having a slip melting point up to about 45° C., a maximum Iodine Value of about 20 and a minimum dilatation at 20° C. of about 900 comprising a randomly rearranged mixture of a lauric fat selected from the group consisting of palm kernel, coconut and coconut-paring oil and from at least 15% to less than 50% of a stearine fraction having an Iodine Value from 5 to 50 and a slip melting point from 40° to 60° C. obtained from a fat selected from the group consisting of palm and cottonseed oils and their hydrogenated derivatives.

4,208,446

METHOD FOR FORMING GRADED SHADE BAND ON SUBSTRATE

Dennis S. Postupack, Natrona Heights; David A. Allerton, Glenshaw, and Richard L. Emmert, New Kensington, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 21, 1978, Ser. No. 898,601
Int. Cl.[2] B05D *1/04*
U.S. Cl. 430—124 **7 Claims**

1. A method of applying an elongated shade band to an elongated area of a flexible sheet of interlayer material suitable for use as an interlayer in a laminated windshield comprising

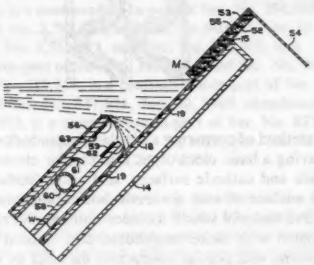
supporting a clear sheet of interlayer material in a given plane;

applying an electrostatic spray of a dye composition from an electrostatic spray gun toward a surface of said sheet about an axis of spray oblique to said plane over a distance d;

interposing a pair of grounded shields of electroconductive material having longitudinally extending curved outboard

lateral edges of corresponding configuration between said electrostatic spray gun and said surface of said sheet, one of said shields being spaced from said surface of said sheet by a distance from 1 to 5 millimeters and being located in the shadow of the other of said shields with respect to the electrostatic spray applied by said electrostatic spray gun, the other of said shields being spaced at least 5 millimeters from said one shield in a direction away from said surface of said sheet and being spaced from said electrostatic spray gun at least 90% of said distance d,

whereby when said electrostatic spray of highly charged, finely divided particles of a dye composition is applied toward said surface of said sheet, a portion of said spray deposits on said surface to form a first coating portion of substantially uniform, maximum intensity, particles of said



spray pass adjacent to the laterally outboard edge of said other shield to form an underspray of highly charged particles, part of said underspray is attracted by said grounded shields, part of said underspray deposits on said sheet surface to form a second coating portion of graded intensity adjacent said first coating portion, and part of said underspray passes adjacent the laterally outboard edge of said one shield to form a very fine underspray portion beneath said one shield, part of said very fine underspray portion deposits on said sheet surface to form a third coating portion adjacent said second coating portion, the boundary portions between said adjacent coating portions being more gradual than adjacent coating portions produced by applying coating compositions past a plurality of shields that serve as mechanical barriers only to the direct flow of coating composition.

4,208,447

METHOD FOR DISORIENTING MAGNETIC PARTICLES

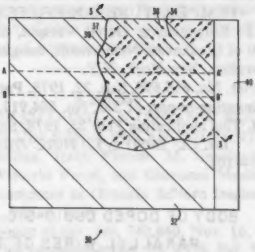
Geoffrey Bate, Boulder, and Larry P. Dunn, Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 5, 1978, Ser. No. 912,800
Int. Cl.[2] H01F *10/00*
U.S. Cl. 427—48 **4 Claims**

1. A method for manufacturing magnetic media comprising the steps of:

coating a substrate material with ferromagnetic particles in a solution to create an uncured magnetic medium;

applying to said uncured magnetic medium, a disorienting magnetic field of diminishing strength in alternate directions and reversing orientation to cause a random distribution of the particles; and



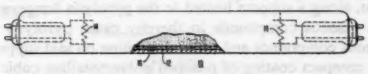
drying said magnetic media, whereby a resultant disoriented particle magnetic medium is obtained.

4,208,448

METHOD FOR IMPROVING THE PERFORMANCE OF LOW PRESSURE FLUORESCENT DISCHARGE LAMP WHICH UTILIZES ZINC SILICATE AS A PHOSPHOR BLEND CONSTITUENT

Elmer S. Panaccione, North Arlington, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 27, 1978, Ser. No. 955,870
Int. Cl.[2] H01J *61/02, 9/22*
U.S. Cl. 427—67 **5 Claims**



1. The method of improving the long-term operating appearance of a low-pressure fluorescent discharge lamp of the type which incorporates a phosphor layer on the envelope interior surface which essentially consists of a mixed homogeneous three-component phosphor blend, said phosphor blend having a red-orange-emitting phosphor component, a blue-violet-emitting phosphor component, and a green-emitting phosphor component, wherein said greenemitting phosphor component is manganese-activated zinc silicate, said lamp having an elongated tubular lighttransmitting vitreous envelope with said homogeneous blend carried as a coating on the interior surface thereof, electrodes operatively positioned proximate the enevelope ends, and a discharge-sustaining filling comprising mercury and inert ionizable starting gas enclosed by said envelope, said method comprising:

a. treating or conditioning the zinc silicate phosphor prior to blending said zinc silicate phosphor with said blue-violet-emitting phosphor and said red-orange-emitting phosphor, by washing said zinc silicate phosphor in an aqueous organic acid solution, wherein said organic acid consists of at least one of acetic, succinic and terephthalic;

b. separating said acid washed zinc silicate phosphor from said acid washing solution;

c. drying said separated zinc silicate phosphor without further water washing of same;

d. suspending as a part of an aqueous envelope coating paint which includes suitable binder material, said separated zinc silicate phosphor, said red-orange-emitting phosphor, and said blue-violet-emitting phosphor, with the relative proportions of said phosphors being those as desired in the completed lamp;

e. applying the coating paint to the envelope interior surface, thereafter volatilizing aqueous vehicle and residual binder material from the applied paint, leaving the phosphor blend as a homogeneous layer on the envelope interior surface, and thereafter completing the lamp fabrication.

4,208,449

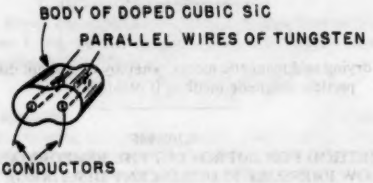
METHOD OF MAKING AN ELECTRIC RESISTOR HAVING A RESISTANCE BODY CONSISTING OF SILICON CARBIDE HAVING A NEGATIVE TEMPERATURE COEFFICIENT

Wilhelmus F. Knippenberg; Gerrit Verspui, and Siegfried H. Hagen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 615,695, Sep. 22, 1975, Pat. No. 4,086,559, and a continuation-in-part of Ser. No. 504,912, Sep. 11, 1974, abandoned. This application Feb. 23, 1978, Ser. No. 880,507

Int. Cl.[2] B05D *5/12;* H01C *7/04*

U.S. Cl. 427—101 8 Claims



1. A method of manufacturing a resistance body for an electric resistor, said resistance body consisting of p-type doped pyrolytic polycrystalline cubic silicon carbide, said method consisting essentially of passing a mixture of a gaseous silicon compound, a gaseous carbon compound or a gaseous silicon carbon compound and a gaseous compound of a doping element, said doping element being only a p-type doping element, along a support heated to the pyrolysis temperatures of said gaseous compounds to thereby cause pyrolysis of said gaseous compounds and cause deposition on said support only of a compact coating of p-doped polycrystalline cubic silicon carbide on said support.

4,208,450

TRANSITION METAL OXIDE ELECTRODES

David L. Lewis, Mentor; Barry A. Schenker, University Heights; Mary R. Suchanski, Mentor, all of Ohio, and C. Richard Franks, deceased, late of North Madison, Ohio (by Margaret S. Yarcusko), assignors to Diamond Shamrock Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 644,639, Dec. 29, 1975, Pat. No. 4,028,215, which is a division of Ser. No. 799,591, May 23, 1977, Pat. No. 4,125,449. This application Sep. 18, 1978, Ser. No. 943,001

Int. Cl.[2] C25B *11/10;* B05D *5/12*

U.S. Cl. 427—126.3 7 Claims

1. A method for manufacture of an electrode for use in an electrolytic cell comprising the steps of: selecting a valve metal substrate from the group of aluminum, molybdenum, niobium, tantalum, titanium, tungsten, zirconium or alloys thereof; applying to said valve metal substrate a semi-conductive intermediate coating of thermally decomposable compounds of tin and antimony containing 0.1 to 30 weight percent antimony, drying said semi-conductive intermediate coating; baking said semi-conductive intermediate coating in an oxidizing atmosphere at an elevated temperature to transform the tin and antimony compounds to their respective oxides such that said semi-conductive intermediate coating attains a weight greater than 2 grams per square meter of said valve metal substrate surface area; and applying on the surface of said semi-conductive intermediate coating a top coating consisting of oxides of transition metals selected from the group consisting of chromium, iron, cobalt, nickel, molybdenum or tungsten such that said topcoating attains a weight greater than 25 grams per square meter of said valve metal substrate surface area.

4,208,451

BIPOLAR ELECTRODE FOR AN ELECTROLYZER

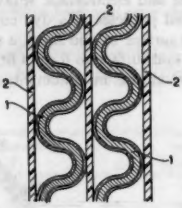
Anthony J. Appleby, Boulogne, and Gilles Crepy, Evry, both of France, assignors to Compagnie Generale d'Electricite, Paris, France

Division of Ser. No. 8,444, Feb. 1, 1979. This application May 2, 1979, Ser. No. 35,186

Claims priority, application France, Feb. 28, 1978, 78 05661

Int. Cl.[2] C25B *11/03, 11/06, 13/04*

U.S. Cl. 427—126 8 Claims



1. A method of preparing a bipolar electrode for an electrolyser having a basic electrolyte, said bipolar electrode including anode and cathode surfaces, said anode surface and said cathode surface of said electrode both comprising a porous conductive material which includes sintered nickel previously impregnated with nickel molybdate, said method comprising impregnating said porous conductive material by at least first immersing said electrode in an aqueous solution of a soluble derivative of molybdenum capable subsequently of being thermally decomposed into molybdenum oxide, and secondly immersing said electrode in a nickel salt solution, and heating said electrode subsequent to said second immersion in a hydrogen atmosphere and at a temperature of about 450° C.

4,208,452

METHOD FOR PROTECTING METALLIC SUBSTRATES

William R. Keithler, Florissant, Mo., assignor to Grow Group, Inc., New York, N.Y.

Division of Ser. No. 745,642, Nov. 29, 1976, Pat. No. 4,154,617. This application Sep. 11, 1978, Ser. No. 941,391

Int. Cl.[2] C09D *5/08;* B05D *1/12*

U.S. Cl. 427—204 8 Claims

1. A method of protecting a metallic substrate subject to corrosion comprising applying to the substrate a galvanic action coating composition comprising glass flakes and a silicon containing composition prepared by (1) mixing a tetra alkoxy silicate containing from 1 to 10 carbon atoms in the alkoxy group or a partial hydrolysate thereof in a water-miscible solvent; (2) adding a weak acid to the mixture and maintaining an acidic pH; (3) partially hydrolyzing the mixture by adding water thereto and (4) adding a strong acid to the mixture to further hydrolyze the mixture; and curing the coating composition resulting in a substantially all inorganic coating on the substrate.

3. A method of protecting a metallic substrate subject to corrosion comprising applying to the substrate a galvanic action coating composition prepared by mixing a tetra alkoxy silicate, wherein the alkoxy groups contain from 1 to 10 carbon atoms or a partial hydrolysate thereof in a solvent which is miscible with water; adding a weak acid to said mixture and maintaining an acidic pH; partially hydrolyzing the mixture by adding water thereto and adding a strong acid to said mixture to further hydrolyze the mixture;

and curing the coating composition resulting in a substantially all inorganic coating on the substrate.

4,208,453

MODIFIED DIFFUSION COATING OF THE INTERIOR OF A STEAM BOILER TUBE

Alfonso L. Baldi, Wynnewood, Pa., assignor to Alloy Surfaces Company, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 694,951, Jun. 11, 1976, abandoned, and Ser. No. 614,834, Sep. 19, 1975, Pat. No. 4,140,760, and Ser. No. 579,945, May 22, 1975, abandoned, said Ser. No. 614,834, and Ser. No. 579,945, each is a continuation-in-part of Ser. No. 304,220, Nov. 6, 1972, Pat. No. 3,936,539, Ser. No. 357,616, May 3, 1973, Pat. No. 3,948,687, Ser. No. 404,665, Oct. 9, 1973, Pat. No. 3,948,689, Ser. No. 446,473, Feb. 27, 1974, Pat. No. 3,958,046, and Ser. No. 446,908, May 3, 1974, Pat. No. 3,958,047, said Ser. No. 304,220, Ser. No. 357,616, Ser. No. 404,665, and Ser. No. 446,473, each is a continuation-in-part of Ser. No. 219,514, Jan. 20, 1972, Pat. No. 3,801,357, said Ser. No. 304,220, Ser. No. 357,616, and Ser. No. 404,665, each is a continuation-in-part of Ser. No. 254,403, May 18, 1972, Pat. No. 3,785,854, and Ser. No. 90,682, Nov. 18, 1970, Pat. No. 3,764,371, said Ser. No. 254,403, is a continuation-in-part of Ser. No. 219,514, , and Ser. No. 90,682, , said Ser. No. 219,514, is a continuation-in-part of Ser. No. 90,682, , and Ser. No. 837,811, Jun. 30, 1969, abandoned, said Ser. No. 90,682, is a continuation-in-part of Ser. No. 837,811, , abandoned. This application Dec. 21, 1976, Ser. No. 752,855

Int. Cl.[2] C23C *11/04*

U.S. Cl. 427—237 7 Claims

1. The process of diffusion coating the interior of a ferrous steam boiler tube about 5 to about 40 feet long, including the steps of packing a diffusion coating pack into that interior and then subjecting that interior to diffusion coating conditions, at least about half the introduced pack by volume being fluent particles greater than 100 microns in size and having a repose angle not over about 45 degrees.

4,208,454

METHOD FOR COATING CATALYST SUPPORTS

James R. Reed; Terrance Way, and Richard A. Leal, all of Flint, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 19, 1978, Ser. No. 870,615

Int. Cl.[2] B05D *7/22*

U.S. Cl. 427—238 5 Claims

1. A method for coating with alumina porous ceramic monolith catalyst supports having at least about 100 axially aligned tubular passageways to the square inch extending from one end of the support to the other so as to produce repeatable results on a production basis and utilizing vacuum pressure to continuously draw air through the passageways to cause the coating slurry to flow over the porous ceramic wall surfaces of the tubular passageways of the monolith support, comprising the steps of applying the coating slurry containing high surface area alumina in suspension to the support, subjecting one end of the support to a vacuum to draw the slurry through and form an alumina coating on the passageways, continuing the application of vacuum pressure to unplug blocked passageways and to form a uniform coating and purge excess coating slurry by the continuing drawing of air through the open passageways, drying the support, and calcining the support to fix the alumina coating on the passageway surfaces, the vacuum static pressure on the support being from about 5 up to about 16 inches water and being applied for a total period of at least about 30 seconds to achieve the desired coating and to remove plugging and excess slurry from the passageways even though the number of open passageways continually increases during the period of vacuum treatment.

4,208,455

METHOD OF SHAPING AN ORGANIC POLYMER INSOLUBLE IN A POLAR SOLVENT

Luigi Giuffre, Milan, Italy; Placido M. Spaziante, Lugano, Switzerland; Vittorio Pozzi, and Giovanni Modica, both of Milan, Italy, assignors to Oronzio deNora Impianti Elettrochimici S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 742,640, Nov. 16, 1976, Pat. No. 4,132,819. This application Oct. 23, 1978, Ser. No. 953,422

Claims priority, application Italy, Dec. 3, 1975, 29951 A/75

The portion of the term of this patent subsequent to Jan. 2, 1996, has been disclaimed.

Int. Cl.[2] B05D *3/10*

U.S. Cl. 427—341 6 Claims

1. A method of shaping an organic polymer insoluble in a polar solvent comprising reacting an insoluble organic polymer containing at least one Lewis acid electron attracting group or Lewis basic electron donating group with a sufficient amount of a lower alkylene oxide to alkoxylate the Lewis group and form an alkoxylated product soluble or easily dispersible in a polar solvent, dissolving or dispersing the alkoxylated product in a polar solvent, shaping the alkoxylated product into the desired form by applying the solution or dispersion to a support and removing the polar solvent and hydrolyzing the alkoxylated product to obtain the original polymer into the desired form.

4,208,456

REPAIR OF FRP PARTS

Richard G. Holmes, Wadsworth, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Mar. 8, 1979, Ser. No. 18,482

Int. Cl.[2] B32B *3/26, 7/12, 31/12, 31/20*

U.S. Cl. 428—63 6 Claims

1. A method for repairing a blister in a molded cured thermoset fiberglass reinforced plastic article comprising

a. forming small holes in the blister leading into the void defined by the blister,

b. injecting a heat curable catalyzed anaerobic sealant through at least one of said holes of said blister into said void to at least substantially fill said void with said sealant,

c. applying pressure to the filled blister to at least substantially reduce the size of the blister to at least substantially conform to the original designed shape of said article while eliminating any excess amount of said sealant ejected from said void of said blister during said pressing and

d. applying heat at a temperature and for a period of time sufficient to cure said sealant and to adhere the blister in its reduced form to the adjacent substrate of said article.

4,208,457

PLASTIC NETTING FOR LOAD UNITIZATION

Michael G. Kelly, Blaine, and Eugene R. Pastien, Moundsview, both of Minn., assignors to Conwed Corporation, St. Paul, Minn.

Filed May 4, 1979, Ser. No. 35,851

Int. Cl.[2] B32B *5/12*

U.S. Cl. 428—107 3 Claims

1. In the wrapping of palletized loads with netting material, the improvement ccomprising said netting material being biaxially oriented to a sufficient degree to stretch less than about 15% when subjected to normal palletized load stresses at temperatures up to about 180° F.

4,208,458

WELDING SPLATTER SHIELD

David F. Wilson, Jr., 1979 Sierra Madre Villa Ave., Pasadena, Calif. 91107

Filed Mar. 5, 1979, Ser. No. 17,493
Int. Cl.[2] B32B 3/04
U.S. Cl. 428—126 9 Claims

1. A shield for protecting against the splatter of material during a welding process comprising;
a sheet of non-flammable material;
a layer of metallic mesh overlaying and secured to said sheet of non-flammable material;
said metallic mesh being comprised of thermally conductive material, whereby said metallic mesh cools molten metal dropped on said shield from a welding process.

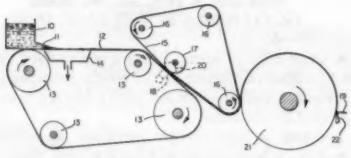
5. The shield according to claim 1 wherein said metallic mesh is attached to said non-flammable sheet by a peripheral stitched flange.

4,208,459

BONDED, DIFFERENTIALLY CREPED, FIBROUS WEBS AND METHOD AND APPARATUS FOR MAKING SAME

Henry E. Becker, 475 Bobbin Mill Rd., Media, Pa. 19063; Albert L. McConnell, 210 Governors Dr., Wallingford, Pa. 19086, and Richard W. Schutte, Sugarfoot Farm, 3519 E. Goshen Rd., Newtown Square, Pa. 19073

Division of Ser. No. 156,327, Jun. 24, 1971, Pat. No. 4,158,594, which is a continuation-in-part of Ser. No. 27,743, Apr. 13, 1970, abandoned. This application Nov. 12, 1976, Ser. No. 741,308
Int. Cl.[2] B32B 29/06, 3/00
U.S. Cl. 428—154 41 Claims



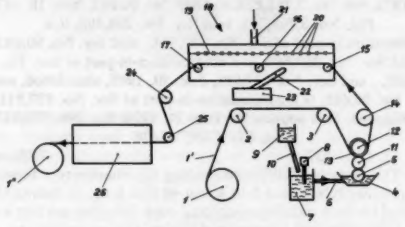
26. A strong, soft, fibrous sheet material having substantial stretch in all directions in its own plane and being suitable for sanitary wiping purposes, said sheet material comprising a web defined by a matrix of cellulosic fibers, said web being itself characterized by such reduced interfiber bonding strength as to have inadequate structural integrity for sanitary wiping purposes, said web comprising cellulosic fibers having a length of less than about ¼ inch and having a basis weight of from about 6 to about 60 lbs. per ream of 2880 square feet, and said sheet material further comprising a fine patterned applique of bonding material on one surface thereof, in interfiber bonding amount comprising at least about 1.4% non-volatile constituents based on the weight of the dry web, such that a substantial portion of said surface of said web is free from said bonding material, said applique penetrating said web at least part way through the thickness thereof, said applique defining bonded regions in said sheet material whereat the fibers are bonded together by said bonding material to contribute to the strength of said sheet material and impart structural integrity thereto, whereas in the unbonded regions of said sheet material very little interfiber bonding strength exists, said sheet material being further characterized by a fine pattern of raised areas and depressions distributed over at least one of the face surfaces thereof with said bonding material being disposed in the raised areas on at least one face surface and the raised areas being finely creped.

4,208,460

PROCESS FOR PRODUCING PAPER HAVING A COATING OF PRESSURE-SENSITIVE TRANSFER COPYING MATERIAL

Bruno Knechtle, Herisau, and Paul Dähler, Lichtensteig, both of Switzerland, assignors to Blockfabrik Lichtensteig, AG, Lichtensteig, Switzerland

Continuation of Ser. No. 726,112, Sep. 24, 1976, abandoned. This application Nov. 21, 1977, Ser. No. 853,546
Claims priority, application Switzerland, Sep. 29, 1975, 12574/75
Int. Cl.[2] B32B 7/14; B41M 5/16
U.S. Cl. 428—195 7 Claims



1. A process for continuously producing paper having a coating of pressure-sensitive copying material comprising a dyestuff donor mass for reaction with a dyestuff acceptor mass in forming a color and a printed text, the process comprising feeding a length of paper continuously and in sequence through means that partially coat in the absence of any water one face of said paper with a solution of a binder and a dyestuff donor mass dissolved in an organic solvent selected from the group consisting of toluene or mixtures of toluene and ethyl alcohol or propyl alcohol, continuously controlling the viscosity of the solution of said dyestuff donor mass and binder during said feeding and further supplying solvent upon need, drying said coating by heating and cooling said coating to consolidate said dyestuff donor mass and continuously applying a printed text on the same face of said paper at the same speed.

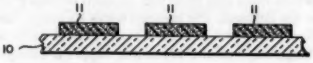
6. The paper product produced by the process of claim 1.

4,208,461

COATED PHOSPHORS AND ARTICLES EMPLOYING SAME

Clarence D. Vanderpool, Towanda, Pa., assignor to GTE Service Corporation, Stamford, Conn.

Division of Ser. No. 917,825, Jun. 22, 1978. This application Dec. 6, 1978, Ser. No. 966,919
Int. Cl.[2] H01J 29/20, 29/26, 29/18
U.S. Cl. 428—207 9 Claims



1. An article of manufacture comprising an array of dots on a cathode ray tube faceplate, the dots comprising coated particles of a cathode ray phosphor distributed in a matrix of a photoresist, the particle coating comprising polyvinyl alcohol modified with from 30 to 80 weight percent of an amino acid selected from the group consisting of glutamic and aspartic acid.

4,208,462

LAMINATED STRUCTURE COMPRISING A LAYER OF FLUORINATED POLYMER

Rene Dauphin, Rixensart, and Nestor Maquet, Waha, both of Belgium, assignors to Solvay & Cie., Brussels, Belgium

Filed May 10, 1979, Ser. No. 37,728
Claims priority, application France, May 11, 1978, 78 14517
Int. Cl.[2] B32B *27/00, 27/04, 27/12*
U.S. Cl. 428—265 20 Claims

1. A laminated structure comprising a layer of polyvinylidene fluoride and a fabric which is hot-pressed onto this layer, wherein said fabric comprises synthetic fibres produced from a polymer which contains polar groups.

4,208,463

NON-DURABLE FLAME-REPELLENT FINISH FOR SYNTHETIC FABRICS AND SYNTHETIC-COTTON BLENDS

Sarwan K. Kakar, Southgate, and John J. Cramer, Wyandotte, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Feb. 9, 1976, Ser. No. 656,116
Int. Cl.[2] B05D *3/02;* B32B *7/00, 9/00*
U.S. Cl. 428—276 6 Claims

1. A method for providing a fabric containing at least 50 percent of synthetic fiber with a non-durable flame-retardant treatment while the fabric retains satisfactory hand properties, said method comprising applying to said fabric an effective amount of a composition consisting essentially of 10 to 30 parts by weight of an alkanolamine selected from the group consisting of monoethanolamine and diethanolamine and 90 to 70 parts by weight of material selected from the group consisting of monoammonium phosphate, diammonium phosphate, and mixtures thereof.

4,208,464

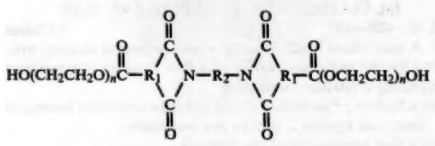
ARTICLE COATED WITH BAKED LAYER OF WATER-SOLUBLE HEAT-RESISTANT INSULATING VARNISH

Takashi Ishizuka, and Naoki Miwa, both of Ibaraki, Japan, assignors to Nitto Electric Industrial Co., Ltd., Ibaraki, Japan

Division of Ser. No. 617,135, Sep. 26, 1975, Pat. No. 4,101,488.
This application May 2, 1978, Ser. No. 902,187
Claims priority, application Japan, Sep. 26, 1974, 49-111229
Int. Cl.[2] D02G *3/00;* H01B *3/44*
U.S. Cl. 428—377 38 Claims

1. A coated article comprising a metal support and a baked layer of a water-soluble heat-resistant insulating varnish containing a resin comprising ester groups and imide rings in the molecule dissolved in water using a volatilizable basic compound, said resin comprising the reaction product of

(A) a carboxyl-containing polyesterimide resin having an acid value of about 30 to 150 obtained by reacting (a) a polyhydric alcohol component comprising at least one organic polyhydric alcohol and containing about 10 to 60 mol % of an imide ring-containing glycol of the general formula(I):



(I)

wherein R_1 is a trivalent aromatic group, R_2 is a divalent organic group, and n is an integer of 1 to 3, with (b) a polycarboxylic acid component comprising at least one trivalent or divalent organic carboxylic acid or the anhydride thereof, about 30 to 100 mol % of which comprises an aromatic tricarboxylic acid or the anhydride thereof so that the equivalent ratio (OH/COOH) between the polyhydric alcohol component and the polycarboxylic acid component is about 1.0 to 2.0;

(B) 1,2,3,4-butanetetracarboxylic acid or an imide-forming derivative thereof, and

(C) an organic diamine.

4,208,465

CLEAR COAT/COLOR COAT FINISH CONTAINING AN ANTIOXIDANT AND AN ULTRAVIOLET LIGHT STABILIZER

David C. Chang, Birmingham, Mich., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 3, 1978, Ser. No. 902,416
Int. Cl.[2] B32B *15/08;* B44D *1/14*
U.S. Cl. 428—416 50 Claims

1. A substrate having a finish of a clear coat top layer in firm adherence to a color coat layer in adherence with said substrate; wherein

the clear coat consists essentially of a transparent film forming binder comprising an acrylic polymer;

the color coat consists essentially of a film forming binder and pigments in a pigment to binder weight ratio of about 1/100 to 150/100; and

the color coat and clear coat each contain about 1–20% by weight, based on the weight of the binder, of an ultraviolet light stabilizer and about 0.1–5% by weight, based on the weight of the binder, of an antioxidant; wherein

the weight ratio of ultraviolet light stabilizer to antioxidant is about 1:1 to about 50:1 and wherein the ultraviolet light stabilizer and antioxidant migrate from the color coat to the clear coat as ultraviolet light stabilizer and antioxidant are lost from exposure to weathering of the finish thereby providing an adequate level of ultraviolet light stabilizer and antioxidant to retard deterioration from weathering of the finish.

4,208,466

ANIONIC FLUOROCHEMICAL SURFACTANTS, PROCESS OF COATING AND TREATED POLYMERIC SHAPES

Alex J. Szur, North Plainfield, N.J., assignor to Diamond Shamrock Corporation, Dallas, Tex.

Division of Ser. No. 560,719, Mar. 21, 1975, Pat. No. 4,140,709.
This application Sep. 18, 1978, Ser. No. 942,993
Int. Cl.[2] B32B *27/34*
U.S. Cl. 428—477 15 Claims

1. A process for preparing an anionic fluoro-chemical surfactant selected from the group consisting of:

(a) producing a sulfate of 6-hydroxyhexyl perfluoroisopropyl ether comprising reacting hexafluoroacetone and alkali metal fluoride to obtain a heptafluoroisopropoxide, thereafter reacting the heptafluoroisopropoxide with 1-chloro-6-hexanol to obtain 6-hydroxyhexyl perfluoroisopropyl ether and then reacting the ether with a sulfating agent to produce the surfactant,

(b) producing a sulfate of a condensation product of one mole of 6-hydroxyhexyl perfluoroisopropyl ether with from about 1 to about 20 moles of ethylene oxide comprising reacting hexafluoroacetone and alkali metal fluoride to obtain a heptafluoroisopropoxide, thereafter reacting the heptafluoroisopropoxide with 1-chloro-6-hexanol to obtain 6-hydroxyhexyl perfluoroisopropyl ether, then reacting one mole of the ether with from about 1 to about 20 moles of ethylene oxide to obtain an ethoxylate and then reacting the ethoxylate with a sulfating agent to produce the surfactant,

(c) producing a sulfate of a condensation product of one mole of 2,2,3,4,4,4-hexafluorobutanol with from about 1 to about 5 moles of propylene oxide comprising condensing one mole of 2,2,3,4,4,4-hexafluorobutanol with from about 1 to about 5 moles of propylene oxide to obtain a propoxy-

late and then reacting the propoxylate with a sulfating agent to produce the surfactant, and

(d) producing a sulfate of a condensation product of one mole of 2,2,3,4,4,4-hexafluorobutanol with from about 1 to about 5 moles of propylene oxide and with from about 1 to about 20 moles of ethylene oxide comprising condensing one mole of 2,2,3,4,4,4-hexafluorobutanol with from about 1 to about 5 moles of propylene oxide to obtain a propoxylate, then condensing the propoxylate with from about 1 to about 20 moles of ethylene oxide to obtain an ethoxylate and thereafter reacting the ethoxylate with a sulfating agent to produce the surfactant.

4,208,467

DIELECTRIC COATING COMPOSITIONS AND RECORDING SHEETS MADE THEREFROM

Charles H. Coney, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 850,161, Nov. 10, 1977, Pat. No. 4,153,782. This application Feb. 15, 1979, Ser. No. 12,412

Int. Cl.[2] B32B *27/36*; C08G *63/18*

U.S. Cl. 428—480 **3 Claims**

1. An electrostatic recording sheet having an electrically conductive substrate and an electric-charge-retentive dielectric coating, said coating comprising a polyester derived from, based on 100 mol percent dicarboxylic acid and 100 mol percent glycol, at least 70 mol percent terephthalic acid or an ester forming derivative thereof, and at least 70 mol percent 1,2-propanediol, said polyester having an inherent viscosity of between about 0.2 and about 0.5.

4,208,468

POLYESTER/VINYL CHLORIDE POLYMER LAMINATES

John A. Cunningham, Welwyn Garden City, and Grahame M. Reade, Wheathampstead, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jun. 22, 1978, Ser. No. 918,262

Int. Cl.[2] B32B *3/26, 5/18, 27/08, 27/30*

U.S. Cl. 428—315 **4 Claims**

1. A laminate comprising a layer of a synthetic linear polyester, a plasticiser-free polymeric primer coating applied to at least one surface of the polyester layer and consisting essentially of a cross-linked polymeric composition the polymer of which is a polymer of at least one monomer selected from the esters of acrylic acid and methacrylic acid, and at least one layer made from a plasticised uncrosslinked vinyl chloride polymer composition, the vinyl chloride polymer containing at least 80% molar of polymerised vinyl chloride, which is bonded to the linear polyester layer through the intermediary of the primer coating.

4. A laminate according to claim 1 wherein the at least one layer of vinyl chloride polymer is foamed.

4,208,469

FLOATING COVER ASSEMBLY

Howard S. Dial, Houston, Tex., assignor to Gulf Seal Corporation, Houston, Tex.

Division of Ser. No. 728,139, Sep. 30, 1976, Pat. No. 4,139,117. This application Aug. 28, 1978, Ser. No. 937,571

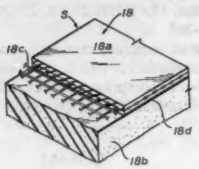
Int. Cl.[2] B32B *3/26, 5/18, 27/08, 27/32*

U.S. Cl. 428—315 **1 Claim**

1. A lightweight laminated flexible floating cover material for floating on a liquid stored in a storage reservoir or ballooning when inflated with a relative low pressure of 1-3 pounds per square foot to provide access to the storage reservoir, comprising:

a reinforced upper layer formed of a sulfochlorinated polyethylene adapted to be exposed to adverse environmental conditions without deterioration thereof, said upper layer having a flexible polyester reinforcement to add strength to said upper level;

a lower layer formed of a closed cell polyethylene foam laminated with said upper layer and in contact with the stored liquid, said lower layer capable of floatably supporting itself and said upper layer on the stored liquid without deterioration of said lower layer and capable of insulating the stored liquid from adverse environmental conditions; and



said laminated upper and lower layers formed of lightweight flexible material for ballooning above the reservoir when the cover material is inflated with a relative lower pressure of 1 to 3 pounds per square foot to provide maintenance access to the storage reservoir.

4,208,470

X-RAY INTENSIFYING SCREEN

Jacob G. Rabatin, Chardon, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 3, 1978, Ser. No. 957,543

Int. Cl.[2] C09K *11/46*

U.S. Cl. 428—328 **5 Claims**

1. An improved X-ray screen lincluding a backing member coated with a physical admixture of a rear earth oxyhalide phosphor according to the formula:

$$LnOx:T_x$$

wherein

Ln is La, Gd, or mixtures thereof,

X is Cl, Br, or mixtures thereof, and

T_x is Tb^{3+} or Tm^{3+} ions or mixtures thereof at activator levels,

with a water soluble trivalent antimony compound in sufficient quantity from a small but effective amount up to about 5 weight percent based on the phosphor weight to retain original emission brightness where utilized in said X-ray screen for a longer time period than for said phosphor without said water soluble trivalent antimony compound, and with said phosphor admixture being adhesively bonded with a polymer binder to said backing member, and said improved X-ray screen resisting loss in film speed when associated with a photographic film.

4,208,471

UV-CURABLE SILOXANE RAZOR BLADE LACQUERS

Ann F. Bresak, and Eva Tolgyesi, both of Rockville, Md., assignors to The Gillette Company, Boston, Mass.

Filed Dec. 22, 1978, Ser. No. 972,577

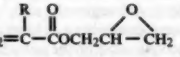
Int. Cl.[2] C08L *43/04, 38/00*; C08F *2/46, 30/08*

U.S. Cl. 428—447 **7 Claims**

7. A steel razor blade bearing a hard adherent coating produced by the radiation curing of a film forming composition comprising a mixture containing

(a) a hydroxy-functional, cyclic polysiloxane resin having at least two hydroxyl groups per molecule;

(b) a first compound of the formula



wherein R is —H or —CH_3; and

(c) a second compound of the formula

$$CH_2=C(R')-CO(CH_2)_3Si(OCH_3)_3$$

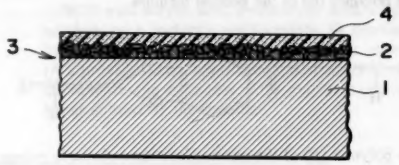
wherein R' is —H or —CH_3, the molar ratio of said cyclic polysiloxane resin to said first compound being from about 2:1 to 1:10 and the molar ratio of said cyclic polysiloxane resin to said second compound being from about 3:1 to 1:5.

4,208,472

COMPOSITE BEARING MATERIAL AND METHOD OF MAKING THE SAME

Hideo Cho, Zama; Yukinori Takenoshita, Shiga, and Saisuke Sugimoto, Kusatsu, all of Japan, assignors to Oiles Industry Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1978, Ser. No. 941,262
Claims priority, application Japan, Sep. 19, 1977, 52-111631
Int. Cl.[2] B21D *53/10*; F16C *33/28*; B32B *15/16*
U.S. Cl. 428—550 **12 Claims**



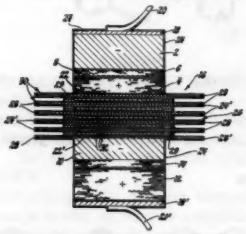
1. In a composite bearing material including a metal strip, a porous sintered metal matrix layer bonded to a surface of said metal strip and a resin composition impregnated into and substantially filling the voids in said porous metal layer and forming a continuous surface layer thereon; the improvement which comprises: said resin composition consists essentially of a blend of 60 to 95 percent by weight of polytetrafluoroethylene and 40 to 5 percent by weight of a copolymer of tetrafluoroethylene and hexafluoropropylene, and mostly all of the copolymer in said composition is included in the surface layer in the form of a fibrillated network.

4,208,473

BIPOLAR BATTERY

Thompson G. Bradley, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 11, 1979, Ser. No. 47,363
Int. Cl.[2] H01M *6/42*
U.S. Cl. 429—112 **5 Claims**



1. A secondary bipolar battery comprising:

a plurality of galvanic cells in contiguous end-to-end relation one to the other and together defining a cell stack having a positive polarity end and a negative polarity end;

said cells each comprising a first electrode containing positive reactant, a second electrode containing negative reactant and an electrolyte physically separating, but ionically communicating said electrodes, said electrolyte being substantially immobilized in the region between said electrodes;

a positive end electrode at said positive polarity end;

a negative end electrode at said negative polarity end;

intermediate positive and negative electrodes arranged between said positive and negative end electrodes such as to form said cells, said intermediate electrodes each containing a predetermined quantity of positive or negative reactant as appropriate to the design capacity of the battery;

an electrically conductive, impermeable barrier contiguously interjacent the positive and negative electrodes of adjacent cells in said stack and adapted to conduct electrical current between the electrodes contiguous said barrier while concurrently preventing direct chemical or electrochemical action therebetween through said barrier;

said barrier having a tortuously-pathed peripheral portion extending outboard the perimeters of said barrier-contiguous electrodes for reducing unwanted parasitic ionic current flow between said barrier-contiguous electrodes incident to the formation of a film of said electrolyte over the surface of said stack and between said barrier-contiguous electrodes, said portion serving to elongate the path length between said barrier-contiguous electrodes through said film;

said positive and negative end electrodes each containing a quantity of reactant greater than said predetermined quantity in intermediate electrodes of the same polarity, said greater quantity being such as to compensate for reactant losses attributable to said parasitic current flow and thereby to substantially retain said capacity for prolonged periods; and

a housing enclosing said stack and adapted to contain an atmosphere around said stack which is substantially nonreactive to the cells' reactants, electrolyte and materials of construction.

4,208,474

CELL CONTAINING ALKALI METAL ANODE, CATHODE AND ALKALI METAL-METAL-CHALCOGENIDE COMPOUND SOLID ELECTROLYTE

Allan J. Jacobson, Princeton, and Bernard G. Silbernagel, Scotch Plains, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 28, 1978, Ser. No. 974,021
Int. Cl.[2] H01M *6/18*
U.S. Cl. 429—191 **34 Claims**

1. In an electric current-producing cell containing an anode having an alkali metal as its anode-active material, an electrolyte, and a chalcogenide-containing cathode, the improvement comprising:

said electrolyte being a solid composition containing an electrolytically active amount of one or more compounds having the formula:

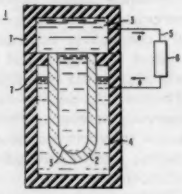
$$A_xB_yC_2$$

wherein A is an alkali metal, wherein B is an element from the group consisting of boron, aluminum and mixtures thereof, wherein C is a chalcogen selected from the group consisting of sulfur, selenium and tellurium, wherein x and y are numerical values greater than zero and wherein $x+3y=4$.

4,208,475
METHOD OF FORMING SODIUM BETA-AL_2O_3 SOLID MATERIALS

Deborah M. Paruso, Monroeville, and Bulent E. Yoldas, Churchill Boro, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 28, 1978, Ser. No. 974,175
Int. Cl.[2] H01M 2/00
U.S. Cl. 429—193 10 Claims



1. A method of making a highly ion-conductive ceramic material, which comprises the steps of:

(A) reacting, in a liquid solvent medium, a first partially hydrolyzed alkoxide compound selected from the group consisting of partially hydrolyzed sodium alkoxide and partially hydrolyzed aluminum alkoxide, with an organometallic compound selected from the group consisting of (a) an alkoxide compound selected from the group consisting of sodium alkoxide and aluminum alkoxide, where the metal ion of the second alkoxide compound is different from the metal ion of the first partially hydrolyzed alkoxide compound, and (b) a second partially hydrolyzed alkoxide compound selected from the group consisting of partially hydrolyzed sodium alkoxide and partially hydrolyzed aluminum alkoxide, where the second partially hydrolyzed alkoxide compound is different from the first partially hydrolyzed alkoxide compound; so that a Na compound is reacted with an Al compound to form alcohol and a liquid polymer containing Na and Al,

(B) hydrolyzing carbon containing organic groups in the polymer, to provide a mixture of alcohols and a hydrolyzed polymer,

(C) removing alcohol from the mixture formed in step (B) to provide an amorphous sodium Beta-alumina precursor, and

(D) heating the amorphous sodium Beta-alumina precursor for a time and at a temperature effective to cause a phase change and formation of a crystalline ceramic material comprising sodium Beta-alumina, where in step (A) the Na compound and the Al compound are added in an amount effective to provide a mole ratio of Na:Al of from 1:5 to 11 in the final crystalline ceramic formed after heating in step (D).

4,208,476
STEAM INJECTION EXTRUSION APPARATUS, PROCESS, AND THE RESULTANT PRODUCT

Ter-Fung Tsao, Evanston, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Jun. 19, 1978, Ser. No. 917,322
Int. Cl.[2] A21D 8/02
U.S. Cl. 426—549 15 Claims

1. A process for producing a food by extrusion at an increased rate comprising:

(a) forming a thermoplastic dough having a moisture content sufficient to render the dough extrudable;

(b) extruding the dough through an orifice to form an extrudate having a temperature when it exits the extruder low enough to cause steam to condense thereon;

(c) injecting steam into the extrudate as the extrudate exits the extruder;

(d) admixing the steam and the extrudate to thereby condense at least part of the steam to water and uniformly distribute the water throughout the extrudate to thereby raise the temperature and increase the moisture of the resulting processed extrudate;

(e) shaping the resulting processed extrudate into the product; and

(f) recovering the product.

4,208,477
HEAT RESISTANT PHOTORESIST COMPOSITION AND PROCESS FOR PREPARING THE SAME

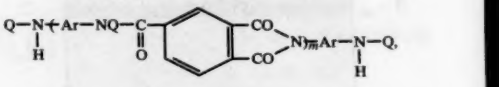
Kaoru Ohmura; Ichiro Shibasaki, and Takeo Kimura, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 16, 1978, Ser. No. 961,462
Claims priority, application Japan, Dec. 26, 1977, 52-155610; Dec. 27, 1977, 52-156687
Int. Cl.[2] G03C 1/72, 18/09
U.S. Cl. 430—281 6 Claims

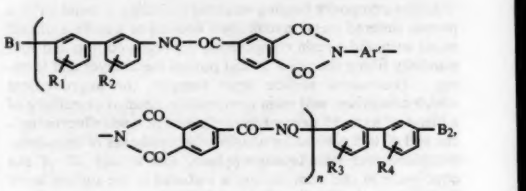
1. A heat resistant photoresist composition comprising:

(1) 100 parts by weight of a polymer selected from the group consisting of

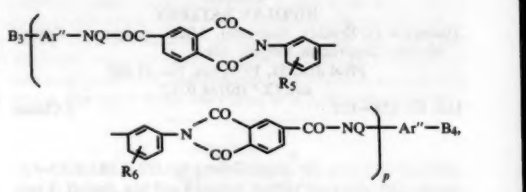
a polymer (α) of the general formula



a polymer (β) of the general formula



a polymer (γ) of the general formula

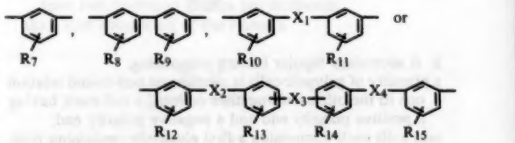


mixtures thereof

wherein

R_1 to R_6 are the same or different and each represent a hydrogen atom, a (C_1—C_4) alkyl group or a halogen atom,

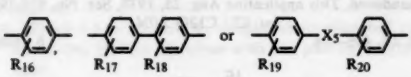
Ar represents



wherein

R_7 to R_{15} are the same or different and each have the same meaning as defined with respect to R_1 to R_6 and X_1 to X_4 are the same or different and each represent —O—, —SO_2—, —CH_2—, —CO—, —COO—, —$C(CH_3)_2$—, —S— or —$(CH_2)_2$—,

Ar' represents



wherein

R_{16} to R_{20} are the same or different and each have the same meaning as defined with respect to R_1 to R_6 and

X_5 has the same meaning as defined with respect to X_1 to X_4,

Ar'' has the same meaning as defined with respect to Ar or Ar',

B_1 to B_4 are the same or different and each represent —NCO or a substituent (A) formed by the reaction of —NCO with acrylic acid, methacrylic acid, a hydroxy acrylate or a hydroxy methacrylate, Q represents a hydrogen atom, or a hydrogen atom and a substituent (A'), provided that each of the rates of substituent introduction into the molecules of the polymers (α), (β) and (γ) as defined by the formulae

$$\frac{\text{number of substituent } (A') \text{ in the molecule}}{m+2} \times 100,$$

$$\frac{\text{number of substituents } (A) + (A') \text{ in the molecule}}{2 \times n + 2} \times 100 \text{ and}$$

$$\frac{\text{number of substituents } (A) + (A') \text{ in the molecule}}{2 \times p + 2} \times 100$$

with respect to the polymer (α), the polymer (β) and the polymer (γ), respectively, is 0 to 50%, said substituent (A') being a member selected from residual groups of acrylic acid chloride, methacrylic acid chloride, glycidyl acrylate and glycidyl methacrylate, said residual groups being introduced alone or in combination, and m, n and p are integers corresponding to reduced viscosities of 0.1 to 2.0 with respect to the polymer (α) the polymer (β) and the polymer (γ), respectively;

(2) 0.01 to 20 parts by weight of a photopolymerizationinitiator; and

(3) 0.1 to 100 parts by weight of a compound having in its molecule at least one ethylenically unsaturated double bond.

4,208,478

TELLURIUM(II) PHOTOGRAPHIC MATERIALS

Sylvia A. Gardner, and Henry J. Gysling, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 13, 1977, Ser. No. 841,857

Int. Cl.[2] G03C *5/24, 1/00, 1/02*

U.S. Cl. 430—616 **43 Claims**

1. A photothermographic element comprising a support having thereon in binder, in reactive association:

(a) a photosensitive metal salt, and

(b) an image-forming combination comprising:

(i) a Te(II) complex represented by the formula: $RTeM(R')_3$ wherein M is Pb, Sn, Ge or Si; R and R' are each selected from the group consisting of alkyl containing 1 to 12 carbon atoms and aryl containing 6 to 12 carbon atoms, with

(ii) a reducing agent for said complex.

4,208,479

LABEL MODIFIED IMMUNOASSAYS

Robert F. Zuk, Mountain View, and Edward T. Maggio, Redwood City, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Filed Jul. 14, 1977, Ser. No. 815,632

Int. Cl.[2] G01N *31/14, 21/22, 33/16*

U.S. Cl. 435—7 **37 Claims**

1. An assay method for determining a member of an immunological pair comprising a mono- or polyepitopic ligand and an anti(ligand) suspected of being present in a sample; said method employing:

(1) labeled anti(ligand), wherein the label is capable of providing a detectable signal and said labeled anti(ligand) binds to said polyepitopic ligand to form a complex;

(2) a macromolecular modifier which interacts with said label to modify the signal produced from said label and is inhibited from interacting with said label by said complex;

(3) poly(ligand analog), wherein poly(ligand analog) has a plurality of epitopic sites capable of competing with said monoepitopic ligand for the binding sites of labeled anti(ligand), and capable of binding with anti(ligand) and labeled anti(ligand) to form a complex; and

(4) polyepitopic ligand; with the proviso that poly(ligand analog) is only employed in an assay for monoepitopic ligand or anti(ligand) that binds monoepitopic ligand and polyepitopic ligand is only employed in an assay for anti(ligand) that binds polyepitopic ligand;

said method comprising;

(A) combining in an assay medium for a time sufficient to form said complexes which sterically inhibit the approach of the macromolecular modifier to said label:

(i) sample;

(ii) labeled anti(ligand);

(iii) modifier;

(iv) poly(ligand analog) in an assay for monoepitopic ligand or anti(ligand) that binds monoepitopic ligand; and

(v) polyepitopic ligand in an assay for anti(ligand) that binds polyepitopic ligand;

(B) exposing said assay medium to an agent which interacts with said label to provide said detectable signal; and

(C) measuring said detectable signal, wherein the measured detectable signal is directly related to the amount of said member in said medium.

8. An assay method for determining a polyepitopic ligand suspected of being present in the sample; said method employing;

(1) enzyme labeled anti(ligand), wherein the enzyme is capable of providing a detectable signal and said enzyme labeled anti(ligand) binds to said polyepitopic ligand to form a complex;

(2) anti(enzyme), which binds to said enzyme to substantially inhibit said enzyme; said method comprising:

(A) combining in an assay medium

(i) sample;

(ii) enzyme labeled anti(ligand);

(B) incubating said assay medium for a time sufficient to form complexes which sterically inhibit the approach of said anti(enzyme) to said enzyme label;

(C) adding to said assay medium anti(enzyme), substrates and any cofactors for said enzyme to produce a detectable signal as a result of the chemical change in the substrates or cofactors; and

(D) measuring said detectable signal, wherein the measured detectable signal is proportional to the amount of said polyepitopic ligand in said assay medium.

13. An assay method for determining a monoepitopic ligand suspected of being present in the sample;

said method employing;

(1) poly(ligand analog)

(2) enzyme labeled anti(ligand), wherein the enzyme is capable of providing a detectable signal and said enzyme la-

beled anti(ligand) binds to said poly(ligand analog) to form a complex;

(3) anti(enzyme), which binds to said enzyme to substantially inhibit said enzyme; said method comprising:

(A) combining in an assay medium

(i) sample;

(ii) enzyme labeled anti(ligand);

(iii) poly(ligand analog)

(B) incubating said assay medium for a sufficient time to form complexes which sterically inhibit the approach of said anti(enzyme) to said enzyme label;

(C) adding to said assay medium anti(enzyme), substrates and any cofactors for said enzyme to produce a detectable signal as a result of the chemical change in the substrates or cofactors; and

(D) measuring said detectable signal, wherein the measured detectable signal is directly related to the amount of said monoepitopic ligand in said assay medium.

19. An assay method for determining a polyepitopic ligand suspected of being present in a sample; said method employing:

(1) fluorescer labeled anti(ligand), wherein said fluorescer labeled anti(ligand) binds to said polyepitopic ligand to form a complex; and

(2) anti(fluorescer); said method comprising:

(A) combining in an assay medium at a pH of from about 6 to 9 and at a temperature in the range of about 15° to 40° C.

(i) sample;

(ii) fluorescer labeled anti(ligand);

(B) incubating said assay medium for a sufficient time to form complexes which sterically inhibit the approach of said anti(fluorescer) to the fluorescent label;

(C) adding anti(fluorescer) in an amount at least about stoichiometric with the amount of fluorescer and exciting fluorescer to an electronically excited state capable of emitting light; and

(D) measuring said emitted light, wherein the measured emitted light is directly related to the amount of said polyepitopic ligand present in said medium.

22. An assay method for determining a monoepitopic ligand suspected of being present in a sample; said method employing:

(1) poly(ligand analog), said poly(ligand analog) having a plurality of ligand analogs capable of competing with ligand for antiligand bonded to a water soluble hub nucleus

(2) fluorescer labeled anti(ligand), wherein said fluorescer labeled anti(ligand) binds to said poly(ligand analog) ligand to form a complex;

(3) anti(fluroescer); said method comprising:

(A) combining in an assay medium at a pH of from about 6 to 9 and at a temperature in the range of about 15° to 40° C.

(i) sample;

(ii) fluorescer labeled anti(ligand);

(iii) poly(ligand analog)

(B) incubating said assay medium for a sufficient time to form complexes which sterically inhibit the approach of said anti(fluorescer) to the fluorescent label;

(C) adding anti(fluorescer) in an amount at least about stoichiometric with the amount of fluorescer and exciting fluorescer to an electronically excited state capable of emitting light; and

(D) measuring said emitted light, wherein the measured emitted light is directly related to the amount of said monoepitopic ligand present in said medium.

4,208,480

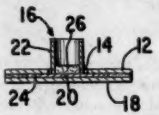
METHOD, REAGENTS AND APPARATUS FOR THE RAPID IDENTIFICATION OF *NEISSERIA GONORRHOEAE* AND *NEISSERIA MENINGITIDIS*

Richard F. D'Amato, Dix Hills, and Louis A. Eriquez, Ronkonkoma, both of N.Y., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 769,119, May 11, 1979, abandoned. This application Aug. 23, 1978, Ser. No. 936,292

Int. Cl.[2] C12Q *1/04*

U.S. Cl. 435—34 **8 Claims**



1. A method for the rapid identification of microorganisms comprising the steps of:

a. Adding a predetermined amount of a salt solution containing a microorganism to be identified to a solution containing a diazonium dye detector reagent in an aqueous solution with a buffer, and a substrate and incubating at about 35° C.for up to five hours and comparing the positive and negative reactions with an identification chart, said substrate being selected from the group consisting of:

(1) β-naphthyl-β,D-galactopyranoside

(2) N-L-λ-glutamyl-β-naphthylamide

(3) L-hydroxyproline-β-naphthylamide

(4) L-serine-β-naphthylamide

(5) L-arginine-β-naphthylamide

(6) glycine-glycine-β-naphthylamide

(7) β-naphthyl-phosphate

(8) β-naphthyl-valerate

(9) 4-methoxyleucine-β-naphthylamide

(10) glycine-β-naphthylamide

4,208,481

USE OF PHENYLALKANES AS PRECURSORS IN BENZYLPENICILLIN FERMENTATION

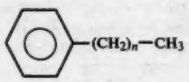
Laszlo J. Szarka, East Brunswick, and Robert W. Eltz, Princeton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 16, 1978, Ser. No. 961,306

Int. Cl.[2] C12P *37/00*

U.S. Cl. 435—43 **9 Claims**

1. The fermentative method of producing benzylpenicillin which comprises aerobically culturing a penicillin-producing microorganism in a medium containing a source of nitrogen, a source of carbon and energy, inorganic salts, and as the side-chain precursor one or more phenylalkanes of the formula



wherein n is an integer from 6 to 13, said fermentation process being performed without the addition of phenylacetic acid or its salts to the medium, followed by the step of recovering the benzylpenicillin from the medium.

4,208,482

IMMOBILIZATION OF GLUCOSE ISOMERASE

Irving Ehrenthal, University City, and Keith E. Miner, Mehlville, both of Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

Filed Apr. 23, 1976, Ser. No. 679,769
Int. Cl.[2] C07G 7/02; C12D 13/04
U.S. Cl. 435—178 8 Claims

1. A process of immobilizing glucose isomerase comprising the steps of:

A. Mixing 0.5 to 1.5 parts by weight whole microbial cells containing glucose isomerase with one part by weight of agar,

B. Combining the agar-microbial cell mixture with organic solvent,

C. Recovering discrete particles of agar gel with whole microbial cells containing glucose isomerase dispersed therethrough, and

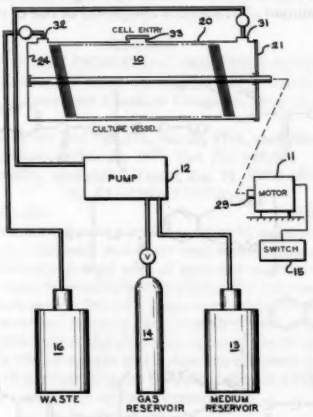
D. Drying the particles to a moisture level of less than about 15%.

4,208,483

TISSUE CULTURE SYSTEM

Harold H. Lee, Toledo, Ohio, assignor to The University of Toledo, Toledo, Ohio

Filed Sep. 21, 1978, Ser. No. 944,267
Int. Cl.[2] C12M 3/00
U.S. Cl. 435—284 4 Claims



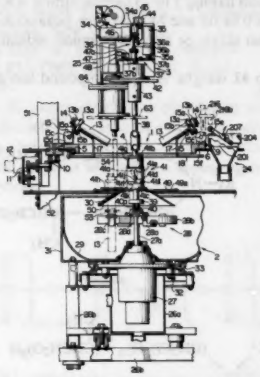
1. A tissue culture system for use in zero or low gravity for cultivating cells that require attachment to a substratum to differentiate, said system comprising a culture vessel substantially filled with culture medium, a shaft rotatably mounted within said vessel, a plurality of discs that provide a substratum for attachment of the cells thereon, said discs being secured to said shaft and projecting circumferentially therefrom at an angle of about 60 degrees to the shaft, means for rotating said shaft in either direction whereby said discs impel said medium, and means for cell entry and for supplying fresh medium and removing waste medium.

4,208,484

APPARATUS FOR HANDLING CENTRIFUGE TUBES IN AUTOMATIC CULTURE SYSTEM

Shinroku Sogi; Makoto Yoshinaga, both of Hachioji; Toshio Shinohara, Chofu; Takayuki Aihara, and Ikuo Tawara, both of Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 13, 1978, Ser. No. 885,599
Claims priority, application Japan, Mar. 22, 1977, 52-30450; Mar. 23, 1977, 52-34407[U]; Mar. 30, 1977, 52-37688[U]; Apr. 2, 1977, 52-40252[U]; Apr. 4, 1977, 52-40894[U]; Apr. 5, 1977, 52-38180; Apr. 5, 1977, 52-38181; Apr. 5, 1977, 52-41591[U]; Apr. 5, 1977, 52-41593[U]
Int. Cl.[2] C12M 1/00
U.S. Cl. 435—286 32 Claims



1. Apparatus for handling centrifuge tubes in an automatic culture system, the apparatus comprising:

a centrifuge;

a turntable rotatably disposed vertically above said centrifuge and being adapted to be intermittently driven for rotation about the axis of a rotor drive shaft of said centrifuge through a given angular increment;

a plurality of processing units, each located at respective predetermined positions where the rotation of the turntable is interrupted, said processing units including a selected combination of a transfer unit for transferring a centrifuge tube between the turntable and the centrifuge, a centrifuge tube delivery unit, a liquid disposal unit, a culturing solution supply unit, a tissue feed and distribution unit and a centrifuge tube discharge unit;

a plurality of centrifuge tube holder mechanisms disposed on a common circumference of said turntable so as to be brought into alignmentwith the position of said respective units when the rotation of the turntable is interrupted; and

a plurality of centrifuge tube holders detachably mounted in each of the holder mechanisms for detachably supporting a centrifuge tube.

4,208,485

FOAMING COMPOSITION FOR TEXTILE FINISHING AND COATINGS

Roop C. Nahta, Charlotte, N.C., assignor to GAF Corporation, New York, N.Y.

Continuation of Ser. No. 897,378, Apr. 18, 1978. This application Mar. 16, 1979, Ser. No. 21,564
Int. Cl.[2] C08J 9/30
U.S. Cl. 521—65 17 Claims

1. A foamable composition comprising from about 50 to about 70 parts by weight of a coating agent selected from

resins, plastics and latexes; and from about 2 to about 8 parts by weight of an acid type catalyst; from about 5 to about 14 parts by weight of the expansion mixture for foaming resin, latex and plastic coatings which comprises a foamable mixture of:

(a) 15 to 53 weight % of a compound having the formulae:

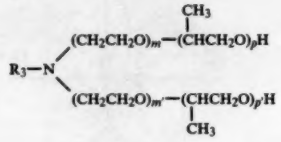
$$R—(OCH_2CH_2)_nOSO_3H^-M^+$$

and/or

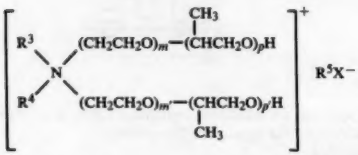
$$R^1—(CH_2CH_2O)_{n+1}SO_3H^-M^+$$

wherein R is alkyl of 6 to 18 carbon atoms or hydroxyalkyl of 6 to 18 carbon atoms; R^1 is hydrogen, alkyl of 6 to 18 carbon atoms or phenoxy substituted with not more than two alkyl groups each having 1 to 23 carbon atoms; n is an integer having a value of 0 to 10; and M is sodium, potassium, calcium, ammonium or an alkyl- or alkyloxy- amine radical of 1 to 6 carbon atoms;

(b) 5 to 42 weight % of a compound having the formulae:

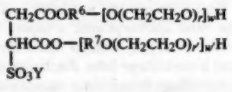


and/or



wherein R^3 is alkyl of 6 to 20 carbon atoms; R^4 and R^5 are independently alkyl of 1 to 4 carbon atoms; X is sulfate, halide or phosphate; m and m′ are integers independently having a value of 4 to 30; and p and p′ are integers independently having a value of 0 to 20; and

(c) 5 to 45 weight % of a compound having the formula:



wherein R^6 and R^7 are independently alkylene of 4 to 22 carbon atoms; r and r′ are independently integers each having a value of 0 to 15; w and w′ are integers independently having a value of 0 or 1; and y is sodium or potassium; and from about 2 to about 26 parts of water per part of coating agent.

4,208,486

STABILIZATION OF ORGANIC AMIDE SOLVENTS AND POLYMER SOLUTIONS THEREOF

Tad L. Patton, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 797,842, May 17, 1977. This application Dec. 8, 1978, Ser. No. 967,660

Int. Cl.[2] C08G *5/42, 5/20, 71/00*

U.S. Cl. 521—89 **34 Claims**

1. A solution of polymers in an organic amide solvent stabilized against degradation in the presence of amines, containing dissolved therein a stabilizing amount of an aromatic sulfonic acid ester of an aliphatic, arylaliphatic or alicyclic polyol, the polymers being selected from the group consisting of polyparabanic acids, poly(iminoimidazolidinediones), polyimides, and polyhydantoins.

4,208,487

NOVEL FROTHER COMPOSITION FOR BENEFICIATION OF MINERAL ORES

Samuel S. Wang, Cheshire; Eugene L. Smith, Jr., and Ernie F. Huliganga, both of Milford, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 817,410, Jul. 20, 1977, abandoned. This application Feb. 15, 1979, Ser. No. 12,273

Int. Cl.[2] C08V *9/30*

U.S. Cl. 521—117 **5 Claims**

1. A composition comprising from about 1 to about 99 weight percent of a frothing agent selected from the group consisting of pine oil, creosote and cresylic acid and, correspondingly, from about 99 to about 1 weight percent of an amino-aldehyde resin comprising the alkylated reaction product of an aldehyde and a material selected from the group consisting of urea, melamine, guanamines, ethylene urea, acetylene diureas, pyrimidines, tetrahydropyrimidines, thiourea carbamates and urethanes.

4,208,488

THERMOSETTING COMPOSITIONS

Kurt Kraft, Auringen; Gerd Walz, Breckenheim, and Thaddäus Wirth, Mainz, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

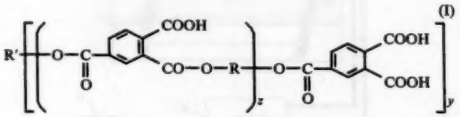
Filed Feb. 15, 1978, Ser. No. 877,868

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1977, 2707018; Dec. 23, 1977, 275733

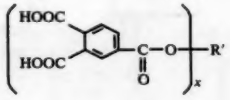
Int. Cl.[2] C08L *63/00*

U.S. Cl. 525—107 **11 Claims**

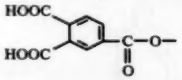
1. A thermosetting coating or adhesive composition (A) at least one component selected from the group consisting of oligomeric and polymeric compounds containing at least one of the functional groups hydroxyl and epoxy groups, and (B) a polycarboxylic acid mixture comprising trimellitic acid and a major amount of at least one compound of one of the formulae



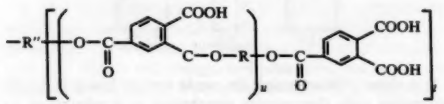
(I)



(II)



(III)



wherein

R, R′ and R‴, being the same or different, each represents a di- to hexavalent aliphatic hydrocarbon radical having a total of from 1 to 12 carbon atoms, said radical containing from zero to 2 olefinic double bonds, said radical without double bonds being interrupted by up to 3 ether bridges;

x and y which may be the same or different, each represents an integer of from 2 to 6;

t an integer of from 1 to 5; and

z and u, which may be the same or different, each represents zero or an integer of from 1 to 5.

4,208,489

POLYCARBONATE MOLDING COMPOSITIONS WITH IMPROVED FLAME-REPELLENCY

Manfred Schmidt, Krefeld; Wolfgang Cohnen, Leverkusen; Frank Kleiner, Cologne; Dieter Freitag, and Karsten Idel, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

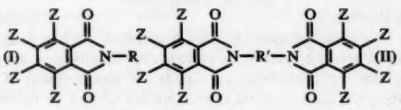
Filed Jan. 9, 1978, Ser. No. 868,145

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1977, 2703710; Feb. 24, 1977, 2707928; Sep. 10, 1977, 2740850

Int. Cl.[2] C08K 5/34, 5/42, 5/53

U.S. Cl. 525—146 13 Claims

1. A polycarbonate molding composition, comprising a high molecular weight thermoplastic polycarbonate, 0.02 to 2% by weight, based on the weight of the polycarbonate, of an alkali metal salt of an organic acid selected from the group consisting of sulphonic, phosphonic and carboxylic acids or an alkali metal salt of an inorganic acid having a solubility in water at 20° C. of less than 2 g per liter of water and 0.02 to 2% by weight, based on the weight of the polycarbonate, of a tetrahalogenophthalimide of the general formula (I) or (II) or mixtures thereof



wherein

R denotes H or C_1 to C_4 alkyl, C_6H_5, $C_{10}H_7$, C_6H_4X, $C_6H_3X_2$ or $C_6H_2X_3$, in which X denotes a fluorine, chlorine or bromine atom, and R′ denotes a single bond or a C_2 to C_4 alkylene, C_6H_4 or p-diphenylene radical and Z denotes a chlorine or bromine atom.

4,208,490

PROCESS FOR PREPARING POLYMER RESINS

Masatsune Kondo, and Akira Tanoue, both of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 709,373, Jul. 28, 1976, abandoned. This application Oct. 25, 1977, Ser. No. 845,041

Claims priority, application Japan, Jul. 31, 1975, 50-94053

Int. Cl.[2] C08F 279/02

U.S. Cl. 525—243 10 Claims

1. A process for preparing polymer resins by polymerization of at least one ethylenic monomer onto at least one rubbery polymer optionally grafted with at least one ethylenic monomer which consists essentially of initiating the polymerization in an emulsion system free of a suspension, stabilizer adding a suspension stabilizer to the polymerization system at the stage after the conversion of the ethylenic monomer to be polymerized reaches 5% by weight and before the emulsion system is broken and then continuing the polymerization in a suspension system until completion of the polymerization.

4,208,491

GRAFT CURING OF ELASTOMERS WITH ADSORBED MONOMERS

Irwin J. Gardner, Scotch Plains, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 3, 1975, Ser. No. 619,294

Int. Cl.[2] C08F 279/02, 279/04, 279/06

U.S. Cl. 525—254 14 Claims

1. A method of crosslinking elastomers containing randomly distributed sites of conjugated olefinic unsaturation, from about 0.15 to about 10 mole % of conjugated olefinic unsaturation being present, which comprises reacting said elastomers with a free radical polymerizable monomer or mixture of said monomers adsorbed into an inorganic non-reactive granular adsorbent, the adsorbent having a surface area of at least 50 m^2/gram, said adsorbed monomer being dispersed in the elastomer, the weight ratio of monomer to adsorbent being from about 100:1 to 1:1 and in the presence of at least one free radical initiator.

4,208,492

HIGH MOLECULAR WEIGHT CARBORANE-SILOXANE BLOCK COPOLYMERS AND METHOD FOR THEIR PREPARATION

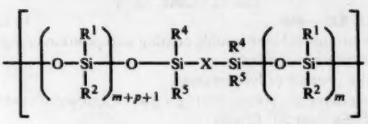
Eddie Hedaya, White Plains, N.Y.; George T. Kwiatkowski, Greenbrook, N.J.; Edward N. Peters, Piscataway, N.J., and Donald D. Stewart, South Plainfield, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 30, 1977, Ser. No. 865,918

Int. Cl.[2] C08L 85/04, 83/10, 79/04

U.S. Cl. 525—389 28 Claims

1. An elastomeric alternating block copolymer comprising alternating soft blocks of a carborane-siloxane polymer and hard blocks of a rigid thermoplastic polymer, wherein said carborane-siloxane polymer block has a repeating unit represented by the formula:



wherein R^1 and R^2, which may be the same or different, each represents hydrogen or a group containing up to 14 carbon atoms and selected from the group consisting of alkyl, alkenyl, cycloalkyl, aryl, alkaryl, aralkyl, alkoxyaryl, haloalkyl, haloaryl, cyanoalkyl, and pyridinyl; R^4 and R^5, which may be the same or different, each represents hydrogen or a group containing up to 14 carbon atoms and selected from the group consisting of alkyl, alkenyl, aryl, alkaryl, alkoxy, alkoxyalkyl, haloalkyl, haloaryl and cyanoalkyl; X represents a divalent radical derived from a carborane selected from the group consisting of 1,7-decacarborane, 1,12-decacarborane, 1,10-octacarborane, 1,6-octacarborane, 2,4-pentacarborane, 1,6-tetracarborane, 9-alkyl-1,7-decacarborane, 9,10-dialkyl-1,7-decacarborane, 2-alkyl-1,12-decacarborane, 2-alkyl-1,10-octacarborane, 8-alkyl-1,6-octacarborane, decachloro-1,7-decacarborane, decachloro-1,12-decacarborane, octachloro-1,10-octacarborane, decafluoro-1,7-decacarborane, decafluoro-1,12-decacarborane, octafluoro-1,10-octacarborane, and mixtures thereof; and m and p individually are integers which have a value of from 0 to 4 and wherein said rigid thermoplastic polymer is selected from the group consisting of polysulfones, polyimides, polycarbonates, aromatic and alkyl polyesters, polyphenylene sulfides, polyquinoxalenes and polybenzimidizoles.

4,208,493

PROCESS FOR CONTINUOUS SYNTHESIS OF POLY (ETHER-ESTER-AMIDE) SEQUENCE COPOLYCONDENSATES

Gerard Deleens, Bernay; Ferlampin Jacques, Saulx les Chartreux, and Claude Poulain, Rosay, all of France, assignors to ATO Chimie, Paris, France

Filed Dec. 28, 1978, Ser. No. 973,885

Claims priority, application France, Dec. 30, 1977, 77 39790

Int. Cl.[2] C08G 69/48

U.S. Cl. 525—420 17 Claims

1. A process to synthesize extrudable, moldable or drawable poly (ether-ester-amide) sequence copolycondensates by the

reaction between a dicarboxylic polyamide, in which the carboxylic functions are located at the chain-ends, and polyoxyalkylene glycol with hydroxylated chain-ends, in the presence of a catalyst for the copolycondensation reaction between a dicarboxylic polyamide and a dehydroxylated polyoxyalkylene glycol, operating in a reaction zone comprising a reagent inlet and a reaction product outlet connected by a reaction space, which is held at a high enough temperature to keep the reaction mixture molten, this process being characterized by the fact that the reaction space is the thin-film space left between the stator and rotor of at least one thin-film stator/rotor reactor, and by the fact that the reaction mixture is made to circulate continuously inside the thin-film reaction space by making the rotor revolve at a speed of at least 200 rpm.

4,208,494

COMPOSITION USEFUL IN MAKING EXTENSIBLE FILMS

Wen-Hsuan Chang; J. Alden Erikson, both of Gibsonia, and Samuel Porter, Jr., Tarentum, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 806,386, Jun. 14, 1977, which is a continuation of Ser. No. 602,855, Aug. 7, 1975, abandoned, which is a division of Ser. No. 392,585, Aug. 29, 1973, Pat. No. 3,919,351. This application Nov. 29, 1978, Ser. No. 964,556

Int. Cl.[2] C08L *75/00*

U.S. Cl. 525—440 **14 Claims**

1. A curable solvent-soluble coating composition comprising the reaction product of:

(A) an organic polyisocyanate;

(B) a polymeric polyol having a glass transition temperature of less than 50° C. and

(C) an interpolymer of:

(1) a hydroxyalkyl ester of an ethylenically unsaturated carboxylic acid; and

(2) at least one other copolymerizable ethylenically unsaturated monomer wherein at least a portion of said monomer is a masked polyisocyanate or blocked polyisocyanate;

said interpolymer being different from said polymeric polyol; when said polymeric polyol is a polymeric acrylic polyol, said polymeric acrylic polyol having a glass transition temperature at least 10° C. lower than that of the interpolymer;

the equivalent ratio of isocyanate groups in (A) to hydroxyl groups in (B) and (C) being between 1:1.1 and about 1:9; the sequence of reaction steps used in preparing said coating composition being selected so that gelation is avoided and the coating composition being curable through said masked polyisocyanate or blocked polyisocyanate moieties.

4,208,495

COMPOSITION USEFUL IN MAKING EXTENSIBLE FILMS

Wen-Hsuan Chang; J. Alden Erikson, both of Gibsonia, and Samuel Porter, Jr., Tarentum, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 806,386, Jun. 14, 1977, which is a continuation of Ser. No. 602,855, Aug. 7, 1975, abandoned, which is a division of Ser. No. 392,585, Aug. 29, 1973, Pat. No. 3,919,351. This application Nov. 29, 1978, Ser. No. 964,557

Int. Cl.[2] C08L *75/00*

U.S. Cl. 525—440 **12 Claims**

1. A curable coating composition comprising:

(a) an ungelled reaction product of:

(1) an organic polyisocyanate,

(2) a polymeric polyol having a glass transition temperature of less than 50° C., and

(3) an interpolymer of:

(i) a hydroxyalkyl ester of an ethylenically unsaturated carboxylic acid; and

(ii) at least one other copolymerizable ethylenically unsaturated monomer;

said interpolymer being different from said polymeric polyol; when said polymeric polyol is a polymeric acrylic polyol, the polymeric acrylic polyol having a glass transition temperature at least 10° C. lower than that of the interpolymer;

the equivalent ratio of isocyanate groups in (1) to hydroxyl groups in (2) and (3) being between 1:1.1 and about 1:9; and

(B) a blocked polyisocyanate or masked polyisocyanate curing agent.

4,208,496

DUST REPELLENT PAINT

Robert A. Bergfeld, Montclair; Shashi P. Patel, Stanhope, both of N.J., and Lynn M. Schlickenrieder, Brighton, Mass., assignors to N L Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 765,070, Feb. 2, 1977, abandoned. This application Apr. 10, 1978, Ser. No. 894,842

Int. Cl.[2] C08K *5/37*

U.S. Cl. 525—3 **2 Claims**

1. In a paint composition having a vehicle portion selected from the group consisting of vinyl acrylic copolymers, acrylic copolymers and oleoresinous alkyds the improvement of increasing the dust repellent characteristics thereof by incorporating therein between about 0.012 and about 0.4 percent by weight, based upon the total weight of the composition, a fluorochemical surfactant consisting essentially of $F(CF_2)_7CH_2CH_2SCH_2CH_2COOLi$.

4,208,497

MANUFACTURE OF HOMOPOLYMERS AND COPOLYMERS OF α-MONOOLEFINS

Klaus Bronstert, Carlsberg; Peter Klaerner, Battenberg, and Gerhard Staiger, Bobenheim-Roxheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 3, 1978, Ser. No. 883,218

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1977, 2713577

Int. Cl.[2] C08F *4/66, 10/06*

U.S. Cl. 526—138 **3 Claims**

1. A process for the manufacture of homopolymer or copolymer of an α-monoolefin of 2 to 6 carbon atoms by polymerizing the monomer or monomers at from 30° to 200° C. under a pressure of from 0.1 to 200 bars by means of a Ziegler-Natta catalyst comprising (I) a titanium trichloride component and (II) an aluminium-alkyl component of the general formula AlR_3 or $ClAlR_2$, where R is alkyl of 1 to 8 carbon atoms, in an atomic ration of titanium, from catalyst component (I), to aluminum, from catalyst component (II), of from 1:1 to 1:100, wherein the titanium trichloride component (I) employed is obtained by exposing a catalyst component consisting, or substantially consisting, of a titanium trichloride co-crystallizate with aluminum chloride of the formula $TiCl_3 \cdot \frac{1}{3}AlCl_3$, to a carbon monoxide atmosphere under a pressure of from 0.1 to 10 bars at from −20° to 100° C. for a period of from 0.5 to 60 minutes whereby the polymerization induction period is lengthened as a result of the treatment of the titanium trichloride with carbon monoxide.

4,208,498

CONTINUOUS SOLUTION POLYMERIZATION PROCESS

Jean-Marie Massoubre, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Division of Ser. No. 723,514, Sep. 15, 1976, which is a division of Ser. No. 639,373, Dec. 10, 1975. This application Sep. 29, 1978, Ser. No. 947,003

Int. Cl.[2] C08F *4/48*

U.S. Cl. 526—179 3 Claims

1. A process for the continuous solution homopolymerization or copolymerization in a hydrocarbon solvent, initiated by an organolithium initiator, of at least one conjugated diene or of at least one conjugated diene with at least one vinyl aromatic compound in at least one reactor in which the monomers in solution in a hydrocarbon solvent are introduced continuously and from which the solution of homopolymers or copolymers formed and of unreacted monomers is also removed continuously, characterized by the fact that the polymerization reaction is carried out in a reactor of the open type at a temperature of 20° C. to 110° C. and in the presence of a deactivating system which inhibits the formation of gels and which comprises (a) a termination agent which deactivates living macromolecules, said termination agent being benzyl chloride or benzyl bromide, and (b) an organic polar agent which increases the reaction velocity of living macromolecules, said organic polar agent being selected from the group consisting of a cyclic ether, a noncyclic ether, a thioether, a polyether, a tertiary amine, a polyamine and a phosphoramide; the components of the deactivating system and the initiator being present in amounts such that the ratio of the deactivation velocities of the living macromolecules to the propagation velocity of the polymerization reaction is between 1×10^{-5} and 5×10^{-3}.

4,208,499

DISPERSING STABILIZER FOR SUSPENSION POLYMERIZATION OF VINYL COMPOUNDS

Motokazu Maruhashi, Kusatsu; Yoshio Ebina, and Kizo Ohnishi, both of Ogaki, all of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 1, 1978, Ser. No. 929,971

Claims priority, application Japan, Aug. 11, 1977, 52-96730

Int. Cl.[2] C08F *2/18, 14/06*

U.S. Cl. 526—202 6 Claims

1. A dispersing stabilizer for suspension homopolymerization or copolymerization of vinyl chloride consisting essentially of (A) a water-soluble protective colloid and (B) a carbonyl group-containing polyvinyl alcohol having an average degree of hydrolysis of 10 to 90% by mole; the absorbance of a 0.1% by weight aqueous solution of said carbonyl group-containing polyvinyl alcohol being not less than 0.18 at a wavelength of 280 mμ.

4,208,500

ACRYLIC COPOLYMER VULCANIZATES

Tadao Matsuo; Satoshi Mashimo; Eiichi Takami, all of Kobe; Kyoichi Mishima, Nishinomiya; Hiroshi Namizashi; Etsuji Uenoyama, both of Kobe, and Masanori Kakei, Toyonaka, all of Japan, assignors to Mitsubishi Belting Limited, Kobe, Japan

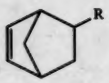
Continuation of Ser. No. 722,466, Sep. 13, 1976, abandoned. This application Nov. 15, 1978, Ser. No. 961,064

Claims priority, application Japan, Sep. 12, 1975, 50-111452

Int. Cl.[2] C08F *8/34*

U.S. Cl. 526—217 23 Claims

1. An acrylic copolymer obtained by the radical polymerization of a monomeric mixture consisting essentially of 100 parts by weight of at least one acrylic acid ester of an aliphatic alcohol containing 1 to 8 carbon atoms and about 1 to about 15 parts by weight of a 5-substituted-2-norbornene of the general formula



wherein R represents $=CH-(CH_2)_xCH_3$, in which x is 0 to 4, or $-CH=CH_2$,

in the presence of about 0.1 to about 3.0 parts by weight, per 100 parts by weight of the monomeric mixture, of 2-mercaptobenzothiazole.

4,208,501

CARBAZOLYL DIACETYLENIC POLYMERS

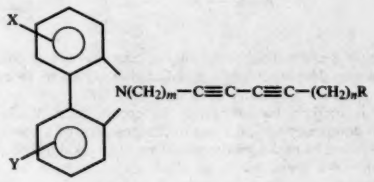
Kwok C. Yee, Randolph; Ronald R. Chance, and Ray H. Baughman, both of Morris Plains, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 772,190, Feb. 25, 1977, Pat. No. 4,125,534. This application Jul. 28, 1978, Ser. No. 929,062

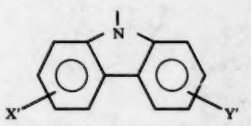
Int. Cl.[2] C08F *126/06*

U.S. Cl. 526—259 16 Claims

1. A polymer prepared by 1,4-addition reaction from a monomer having the formula



where "m" and "n" are integers of from 0 to 10, X and Y are independently selected from the group consisting of —H, —Cl, —Br and —NO and R is a member selected from the group consisting of $—CH_3$ —OH, —OCONHR' and



where R' is (a) an alkyl derivative represented by $—C_rH_{2r+1}$, where "r" ranges from 1 to 18, (b) an aryl derivative of $—C_6H_4$, $—C_6H_4—p—CH_3$, $—C_6H_4—m—CH_3$ or $—C_{10}H_7$ or (c) an ester derivative of $—CH_2OCOC_sH_{2s+1}$, where "s" ranges from 2 to 4 and X' and Y' are independently selected from the group consisting of —H, —Cl, —Br and —NO.

4,208,502

CURABLE RESIN COMPOSITIONS

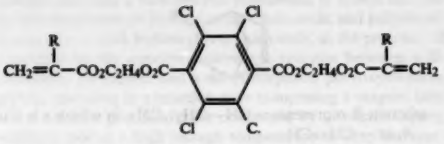
Robert W. Stackman, Morristown, and Anthony B. Conciatori, Chatham, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Jul. 18, 1974, Ser. No. 489,628

Int. Cl.[2] C08F *222/10*

U.S. Cl. 526—292 2 Claims

1. A curable polyester characterized by the formula:



wherein R is a radical selected from hydrogen and methyl groups.

4,208,503

EPOXY-FUNCTIONAL POLYSILOXANE POLYMERS

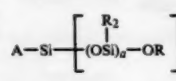
Eugene R. Martin, Onsted, Mich., assignor to SWS Silicones Corporation, Adrian, Mich.

Continuation-in-part of Ser. No. 801,509, May 31, 1977, which is a continuation-in-part of Ser. No. 729,069, Oct. 4, 1976, abandoned, which is a continuation of Ser. No. 566,000, Apr. 7, 1975, abandoned. This application Sep. 18, 1978, Ser. No. 943,011

Int. Cl.[2] **C08G** *77/06*

U.S. Cl. 528—14 **11 Claims**

1. A composition comprising epoxy-functional polysiloxane polymers of the formula



in which A is a radical containing at least one epoxy group, R is a monovalent hydrocarbon radical having up to 18 carbon atoms, and a is a number of from 1 to 20,000.

11. A method for preparing the composition of claim **1**, which comprises equilibrating in the presence of a basic catalyst selected from the group consisting of an alkali metal alkoxide, an alkali metal alkyl, an alkali metal hydride, an alkali metal silanoate, an alkali metal hydroxide and tetramethyl ammonium hydroxide and at an elevated temperature, a cyclic organopolysiloxane of the formula

with a silane of the formula

$$A—Si(OR)_3$$

in which A is a radical having at least one epoxy group, R is a monovalent hydrocarbon radical having from 1 to 18 carbon atoms and z is from 3 to 6.

4,208,504

ADHESIVE REPELLENT COATINGS AND SUBSTRATES COATED THEREWITH

Friedrich Hockemeyer, Bergham; Wolfgang Hechtl, Burghausen; Heinrich Marwitz, Burghausen, and Paul Hittmair, Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Division of Ser. No. 872,692, Jan. 26, 1978, Pat. No. 4,154,714, which is a continuation of Ser. No. 663,896, Mar. 4, 1976, abandoned. This application Oct. 12, 1978, Ser. No. 950,893

Int. Cl.[2] **C08G** *77/06*

U.S. Cl. 528—15 **6 Claims**

1. A process for imparting varying levels of adhesive repellency to a coated substrate which comprises coating the substrate with a composition containing (1) diorganopolysiloxanes having terminal Si-bonded vinyl groups in which 3 to 30 mol percent of the nonterminal siloxane units are diphenylsiloxane units and at least 50 mol percent of the remaining organic radicals on the siloxane units are methyl radicals, said diorganopolysiloxanes (1) having an mkp value of from 300 to 800 as determined in a Brabender Plastograph at 25° C., and at 60 revolutions per minute; (2) organopolysiloxanes having at least 3 Si-bonded hydrogen atoms per molecule, in which the adhesive repellency of the resultant coating is inversely proportional to the mol percent of Si-bonded hydrogen present on the organopolysiloxanes (2); (3) a catalyst which promotes the addition of Si-bonded hydrogen atoms to the vinyl groups and (4) an inert organic solvent and thereafter heating the coated substrate to a temperature of at least 80° C.

4,208,505

HETEROCYCLIC AROMATIC POLYMERS OF THE POLYIMIDAZOPYRROLONE CLASS, THEIR PREPOLYMERS AND THEIR PREPARATION

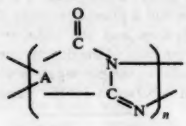
Alain M. M. Groult, Ambilly; Hervé N. Tournier, Valleiry, and Philippe Fayet, Ramonville Saint Agne, all of France, assignors to Centre National d'Etudes Spatiales, Paris, France

Filed Sep. 9, 1977, Ser. No. 832,017

Int. Cl.[2] **C08G** *69/12, 77/26*

U.S. Cl. 528—30 **18 Claims**

1. A solid polymer consisting essentially of recurring units having the formula:



wherein A is a tetravalent organic radical selected from the group consisting of an aromatic radical, a heterocyclic aromatic radical and a heterocyclic radical containing at least six carbon atoms and including up to four hetero atoms selected from the group consisting of O, S, and N atoms; wherein the four chain forming bonds of the radical A are in two pairs with the bonds in each pair being ortho to one another; wherein n is a high integer.

4,208,506

POLYPARAFFINSILOXANE SHAPED ARTICLE FOR USE IN BIOMEDICAL APPLICATIONS

William G. Deichert, Macedon, N.Y.; Kai C. Su, Arlington, Tex., and Martin F. vanBuren, Webster, N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation-in-part of Ser. No. 878,831, Feb. 21, 1978, Pat. No. 4,153,641, which is a continuation-in-part of Ser. No. 818,783, Jul. 25, 1977, abandoned. This application Feb. 22, 1979, Ser. No. 14,188

The portion of the term of this patent subsequent to May 8, 1996, has been disclaimed.

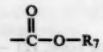
Int. Cl.[2] **C08G** *77/20*

U.S. Cl. 528—32 **27 Claims**

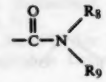
1. A fillerless, hydrolytically stable, biologically inert, transparent, oxygen transporting, polymeric, shaped article for use in biomedical applications comprising polymerizing a poly(organoparaffinsiloxane) monomer represented by the following formula:

wherein A is an activated unsaturated group; R is a divalent

hydrocarbon radical having from 1 to about 22 carbon atoms; R_1, R_2, R_3 and R_4 can be the same or different and are selected from the group consisting of a monovalent hydrocarbon radical having from 1 to about 12 carbon atoms and a halogen substituted monovalent hydrocarbon radical having from 1 to about 12 carbon atoms; R_5 and R_6 can be the same or different and are selected from the group consisting of hydrogen, a hydrocarbon radical containing from 1 to about 12 carbon atoms, a carboxylic acid group, a carboxylic acid ester group represented by the formula



wherein R_7 is selected from the group consisting of a hydrocarbon group containing from 1 to about 12 carbon atoms and a carboxylic acid amide represented by the formula



wherein R_8 and R_9 can be the same or different and each is selected from the group consisting of hydrogen and a hydrocarbon group containing from 1 to about 12 carbon atoms; x is 2 or greater and m is 1 or greater, forming a polymer in a crosslinked network.

4,208,507

POLYURETHANE-UREA ELASTOMERS AND THEIR PRODUCTION

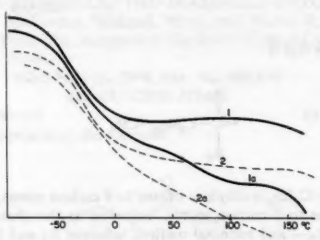
Herbert Stutz, Karlsruhe; Karl H. Illers, Otterstadt, and Ludwig Schuster, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 6, 1978, Ser. No. 922,317

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1977, 2731815

Int. Cl.² C08G *18/32, 18/75*

U.S. Cl. 528—64 **4 Claims**



1. A polyurethane-urea elastomer having, a modulus of shear that is independent of temperature over the range 0° to 170° C. prepared by reacting

(A) a prepolymer which possesses terminal NCO groups bonded to a cycloaliphatic structure, which prepolymer has for its part been obtained by reacting an essentially difunctional polyhydroxy compound having a molecular weight of from 600 to 10,000, with or without a low molecular weight polyhydroxy compound having a molecular weight of less than 300, and an organic diisocyanate possessing at least one NCO group bonded to a cycloaliphatic structure, in amounts which provide a ratio of total OH:NCO groups of from 1:1.2 to 1:10, with

(B) 3,3',5,5'-tetramethyl-4,4'-diamino-diphenylmethane, A and B being reacted in the molar ratio of from 1:0.8 to 1:1.2.

4,208,508

SEMIPERMEABLE MEMBRANES OF POLYARYL ETHER SULFONES

Yasuo Hashino, Kashiwa; Fusakazu Hayano, Fuji, and Kenji Ito, Nobeoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

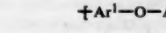
Filed Jul. 7, 1978, Ser. No. 922,772

Claims priority, application Japan, Jul. 8, 1977, 52/80913

Int. Cl.² B01D *13/00, 13/04*

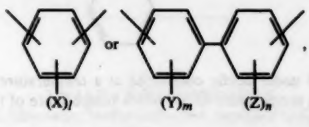
U.S. Cl. 528—175 **17 Claims**

1. A semipermeable membrane of a polyaryl ether sulfone having repeating units of the formula,



wherein

Ar^1 and Ar^2 independently represent



wherein

X, Y and Z independently represent an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, a chlorine atom or a bromine atom; and l, m and n independently represent zero or an integer of 1 to 4,

and having a contact angle of its surface to water of at most 65°.

4,208,509

PROCESS FOR THE PREPARATION OF POLYTEREPHTHALOYL-AND POLYDIPHENYL ETHER-4,4-DICARBOXYLIC ACID OXALAMIDRAZONE

Michael Wallrabenstein, Worth am Main; Joachim Behnke, and Walter Brodowski, both of Amorbach, all of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Jan. 20, 1978, Ser. No. 871,135

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1978, 2703072

Int. Cl.² C08G *69/32, 73/00*

U.S. Cl. 528—207 **5 Claims**

1. A process for the preparation of polyterephthaloyl- and polydiphenylether-4,4'-dicarboxylic acid oxalamidrazone by reaction of terephthaloyl chloride or diphenylether-4,4'-dicarboxylic acid dichloride with oxalic acid bisamidrazone by the solution polycondensation process in a reaction medium consisting of an organic solvent and lithium chloride, characterized in that use is made of a solution of pure oxalic acid bisamidrazone in amine-free and water-free dimethylacetamide or N-methylpyrrolidone or a mixture thereof, containing 4 to 6 wt.% water-free lithium chloride to which is slowly added at temperatures of 10° to 35° C., a solution of the pure acid chloride in an inert, amine-free and water-free solvent, with the provision that the total quantity of solvents represent 1.25 to 3.30 liters per mole of oxalic acid bisamidrazone.

4,208,510

PREPARATION OF 3-ARYL-ISOXAZOL-5-YL BENZOATES

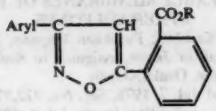
Robert K. Howe, Bridgeton, and Kou-Chang Liu, Creve Coeur, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 20, 1978, Ser. No. 971,158

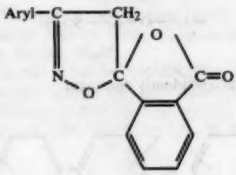
Int. Cl.² C07D *261/08*

U.S. Cl. 548—247 **9 Claims**

1. A process for preparing 3-Aryl-isoxazol-5-yl-benzoic acid and esters thereof having the formula



wherein R is hydrogen or R'CH_2— and R' is hydrogen or alkyl having up to four carbon atoms, inclusive which comprises reacting a spiro compound having the formula



with ROH under acidic conditions at a temperature ranging from room temperature to the reflux temperature of the ROH compound.

4,208,511

ISOMORPHIC COPOLYOXALATES AND SUTURES THEREOF

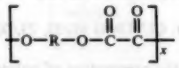
Shalaby W. Shalaby, Lebanon, and Dennis D. Jamiolkowski, Long Valley, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 752,374, Jan. 19, 1977. This application Jun. 14, 1978, Ser. No. 915,500

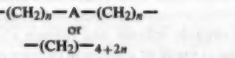
Int. Cl.[2] C08G *63/18*

U.S. Cl. 528—272 **8 Claims**

1. Isomorphic polyoxalate polymers consisting essentially of units of cyclic and linear oxalates and having the general formula

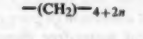


wherein each R is



I

or



II

and from about 5 to 95 mol percent of the R units are I; A is trans 1,4-cyclohexylene or p-phenylene, n is 1 or 2 and is the same for I and II, and x is the degree of polymerization resulting in a polymer having an inherent viscosity of at least 0.3 as determined on a 1 gm per liter solution of polymer in chloroform or hexafluoro-isopropanol at 25° C.

4,208,512

9-DEOXY-6,9α-EPOXYMETHANO-PG C-1 AMIDES

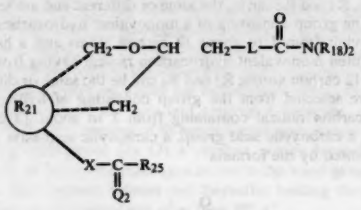
Robert C. Kelly, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 788,145, Apr. 19, 1977, Pat. No. 4,130,569. This application Sep. 11, 1978, Ser. No. 941,483

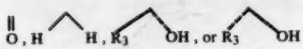
Int. Cl.[2] C07D *311/02*

U.S. Cl. 542—426 **13 Claims**

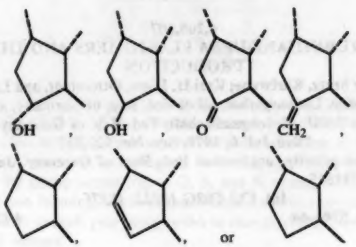
1. A cyclic ether of the formula



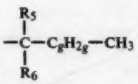
wherein L is (1) a valence bond, (2) —$(CH_2)_d$—wherein d is one to 5 inclusive, (3) —$(CH_2)_t$—CF_2—wherein t is 2, 3, or 4, (4) —CH_2—CH=CH—A— wherein A is a valence bond or —$(CH_2)_h$— wherein h is one, 2, or 3, or (5) —CH_2—O—CH_2—Y— wherein Y is a valence bond or —$(CH_2)_k$— wherein k is one or 2; wherein Q_2 is



wherein R_3 is hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein R_{18} is hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, the two R_{18}'s being the same or different;
wherein R_{21} is

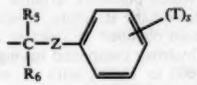


wherein R_{25} is



(1)

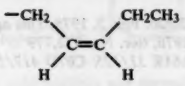
wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between —CR_5R_6— and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro;



(2)

wherein R_5 and R_6 are as defined above with the proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 6 carbon atoms, inclusive between —CR_5R_6— and the phenyl ring; wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro,

chloro, trifluoromethyl, or —OR_7 wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different; or


(3)

wherein X is cis— or trans—CH=CH—, —C≡C—, or —CH_2CH_2—; and wherein the wavy line (~) indicates attachment in cis or trans configuration.

4,208,513

BENZOXAZOLYL-PHENYLSTILBENES, PROCESSES FOR PRODUCING THEM, AND THEIR USE AS OPTICAL BRIGHTENERS

Kurt Burdeska, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

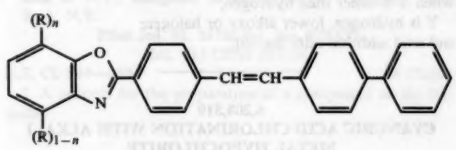
Filed Oct. 30, 1978, Ser. No. 955,687

Claims priority, application Luxembourg, Nov. 10, 1977, 78483

Int. Cl.² C07D *263/54*

U.S. Cl. 542—459 **9 Claims**

1. A benzoxazolyl-phenyl stilbene of the formula



wherein

n is the number 0 or 1, and

R is halogen, phenyl, phenoxy or alkyl having 2 to 4 C atoms.

4,208,514

4(3H)-OXOBENZO-2,1,3-THIADIAZINE-2,2-DIOXIDES

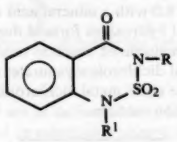
Lennon H. McKendry, Midland, Mich., and Walter P. Bland, Takoma Park, Md., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 23, 1976, Ser. No. 660,576

Int. Cl.² C07D *285/16*

U.S. Cl. 544—11 **15 Claims**

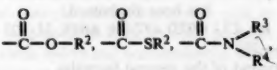
1. A compound of the formula



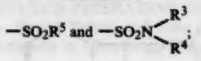
wherein:

R represents straight or branched alkyl or haloalkyl, each of 1 to 6 carbon atoms, alkenyl or haloalkenyl, each 3 to 6 carbon atoms, cyanoalkyl, alkylthioalkyl or alkoxyalkyl each of 2 to 6 carbon atoms and cycloalkyl of 3 to 6 carbon atoms;

R^1 represents



-continued



R^2 represents straight or branched alkyl or haloalkyl each of 1 to 7 carbon atoms, alkenyl and haloalkenyl of 3 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenyl, loweralkylphenyl and halophenyl;

R^3 represents alkyl of 1 to 4 carbon atoms, and cycloalkyl of 3 to 6 carbon atoms;

R^4 represents any of R^3 and alkoxy containing 1 to 4 carbon atoms, and, R^3 and R^4 when taken together constituting a 4 to 6 carbon heterocyclic radical together with the nitrogen from which each depends; and

R^5 represents alkyl of 1 to 16 carbon atoms, haloalkyl of 1 to 4 carbon atoms, phenyl, loweralkylphenyl and halophenyl.

4,208,515

3-HALO CEPHALOSPORINS

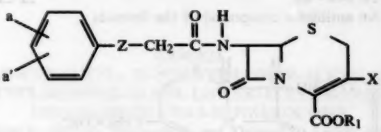
Robert R. Chauvette, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 656,240, Feb. 9, 1976, Pat. No. 4,064,343, which is a division of Ser. No. 457,150, Apr. 1, 1974, Pat. No. 3,962,227, which is a continuation-in-part of Ser. No. 335,414, Feb. 23, 1973, abandoned. This application Apr. 5, 1977, Ser. No. 784,770

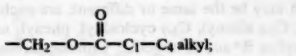
Int. Cl.² A61K *31/545*; C07D *501/20*

U.S. Cl. 544—16 **4 Claims**

1. The compound of the formula



wherein a and a' independently are hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, halogen, hydroxy, nitro, amino, or carboxy; Z is O or S; X is fluoro, chloro, bromo, or iodo; R_1 is hydrogen, benzyl, p-methoxybenzyl, p-nitrobenzyl, diphenylmethyl, 2,2,2-trichloroethyl, t-butyl, or a pharmaceutically acceptable ester of the formula



and when R_1 is hydrogen, the non-toxic pharmaceutically acceptable salts thereof.

4,208,516

7-(1,3-DITHIOLAN-2-IMINO)-Δ^2-CEPHALOSPORANIC ACID DERIVATIVES

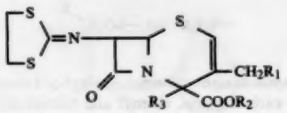
Boyd L. Harrison; Joseph E. Dolfini, both of Cincinnati, Ohio, assignor to Richardson-Merrell Inc., Wilton, Conn.

Filed Mar. 12, 1979, Ser. No. 19,415

Int. Cl.² C07D *501/18*

U.S. Cl. 544—17 **7 Claims**

1. A 7-(1,3-dithiolan-2-imino)-Δ^2-cephalosporanic acid derivative having the formula



wherein

R_1 is selected from the group consisting of hydrogen and acetoxy;

R_2 is selected from the group consisting of hydrogen, t-butyl, 2,2,2-trichloroethyl, benzhydryl, formyloxymethyl and alkanoyloxymethyl in which the alkanoyl group contains from 2 to 5 carbon atoms:

R_3 is selected from the group consisting of alkyl having from 1 to 4 carbon atoms, carboxymethyl, alkoxycarbonyl and (alkoxycarbonyl)methyl wherein the alkoxy group has from 1 to 4 carbon atoms, halomethyl, benzyl and substituted benzyl wherein the benzyl substituent is methoxy or halo; and

the pharmaceutically acceptable salts thereof.

4,208,517

CAPHALOSPORIN COMPOUNDS HAVING AT POSITION-7 AN α-ETHERIFIED HYDROXYIMINOARYLACETAMIDO GROUP

Michael W. Foxton, Chalfont St. Giles; Gordon I. Gregory, Chalfont St. Peter, and David M. Rogers, Ulverston, all of England, assignors to Glaxo Operations UK Limited, Greenford, England

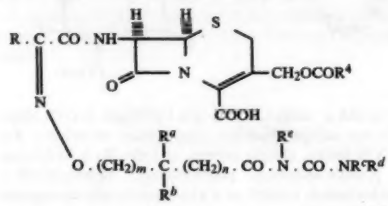
Filed Nov. 28, 1977, Ser. No. 855,080

Claims priority, application United Kingdom, Nov. 30, 1976, 49961/76

Int. Cl.[2] A61K *31/545;* **C07D** *501/32, 501/34*

U.S. Cl. 544—28 **11 Claims**

1. An antibiotic compound of the formula



(I)

wherein R is a phenyl, thienyl or furyl group; R^a and R^b, which may be the same or different, are each hydrogen, C_{1-4} alkyl, C_{2-4} alkenyl, C_{3-7} cycloalkyl, phenyl, naphthyl, thienyl or furyl or R^a and R^b together with the carbon atom to which they are attached form a C_{3-7} cycloalkylidene or cycloalkenylidene group; R^c and R^d, which may be the same or different, each represents a hydrogen atom or a C_{1-4} alkyl group; or R^c and R^d together with the nitrogen atom to which they are attached form an unsubstituted saturated or unsaturated heterocyclic ring of 5–7 ring members or such a ring monosubstituted by lower alkyl; R^e represents hydrogen or C_{1-4} alkyl; R^4 represents C_{1-7} alkyl; C_{1-7} alkyl interrupted by an oxygen or sulphur atom or an imino group; C_{1-7} alkyl monosubstituted by cyano, carboxy, lower alkoxycarbonyl, hydroxy, carboxycarbonyl, halo or amino; C_{2-7} alkenyl, C_{2-7} alkenyl interrupted by an oxygen or sulphur atom or an imino group; lower cycloalkyl; phenyl; hydroxyphenyl; chlorophenyl; fluorophenyl; tolyl; nitrophenyl; aminophenyl methoxyphenyl; methylthiophenyl; lower cycloalkyl C_{1-4} alkyl or phenyl C_{1-4} alkyl; and m and n are each 0 to 1 such that the sum of m and n is 0 or 1 or a physiologically acceptable salt, ester, 1-oxide or solvate thereof.

4,208,518

SUBSTITUTED HYDRAZINO DERIVATIVES OF BENZISOTHIAZOLE-1,1-DIOXIDES

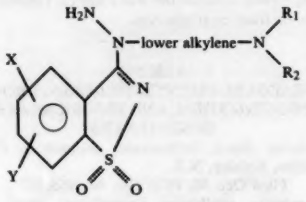
Peter C. Wade, Pennington, and Thomas P. Kissick, Princeton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 875,020, Feb. 3, 1978. This application Dec. 27, 1978, Ser. No. 973,779

Int. Cl.[2] A61K *31/425;* **C07D** *417/12*

U.S. Cl. 544—62 **4 Claims**

1. A compound of the formula



wherein R_1 R_2 each is lower alkyl or together with the nitrogen form a pyrrolidino, morpholino, thiamorpholino, piperidino or N-lower alkylpiperazino radical; X is hydrogen, halogen, lower alkyl, lower alkoxy or nitro, X being the same as Y when Y is other than hydrogen;

Y is hydrogen, lower alkoxy or halogen;

and acid addition salts thereof.

4,208,519

CYANURIC ACID CHLORINATION WITH ALKALI METAL HYPOCHLORITE

Sidney Berkowitz, Highland Park, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 721,295, Sep. 8, 1976, abandoned. This application Jan. 11, 1978, Ser. No. 868,560

Int. Cl.[2] C07D *251/36*

U.S. Cl. 544—190 **12 Claims**

1. A process for producing an alkali metal dichloroisocyanurate, which comprises:

(a) mixing sufficient amounts of water, cyanuric acid and an alkali metal hypochlorite to form a reaction medium containing 6 to 20 weight % cyanuric acid and having a cyanuric acid to alkali metal hypochlorite mole ratio of 1:2.0 to 2.2 and a pH value of 6.5 to 11.0;

(b) maintaining the reaction medium at a temperature from 10° to 55° C. to form chlorinated isocyanurates;

(c) adjusting the pH value of the reaction medium to between 6.0 and 8.0 with a mineral acid solution to neutralize alkali metal hydroxides formed during the reaction;

(d) cooling the neutralized reaction medium to precipitate the alkali metal dichloroisocyanurate; and

(e) recovering the alkali metal dichloroisocyanurate crystals from the reaction medium.

4,208,520

7-(SUBSTITUTED)-7H-PYRROLO[3,2-*f*]QUINAZOLINE-1,3-DIAMINES

Kurt W. Ledig, deceased, late of Philadelphia, Pa., and by David R. Howes, executor, Baltimore, Md., assignors to American Home Products Corporation, New York, N.Y.

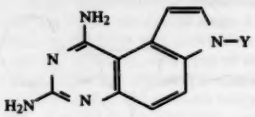
Filed Jun. 28, 1978, Ser. No. 920,083

The portion of the term of this patent subsequent to Oct. 3, 1995, has been disclaimed.

Int. Cl.[2] C07D *487/04;* **A61K** *31/505*

U.S. Cl. 544—250 **7 Claims**

1. A compound of the general formula:



or a non-toxic acid addition salt thereof, wherein:

Y is $-CH_2R$ or $-R^1$

wherein:

R is [2,4-dichlorophenyl, 3-acetylphenyl,] 3-carbomethoxyphenyl, [3-isopropylphenyl,] 4-carbo-2-pentyloxyphenyl, or 4-carbomethoxyphenyl;

and

R^1 is 4-pyridinyl or 2-(4-methylpyridinyl).

4,208,521

PROCESS FOR THE PREPARATION OF IMIDAZO[2,1-b]QUINAZOLINONES

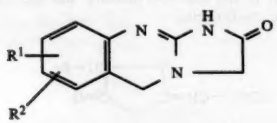
Ronnie R. Crenshaw, Dewitt, and Thomas A. Montzka, Manlius, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Jul. 31, 1978, Ser. No. 929,627

Int. Cl.² C07D *487/04*

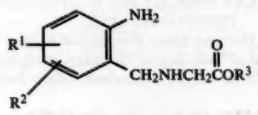
U.S. Cl. 544—250 **10 Claims**

1. A process for the preparation of a compound of the formula



I

wherein R^1 and R^2 are each individually selected from hydrogen, (lower)alkyl, (lower)alkoxy, (lower)alkylthio, trifluoromethyl, hydroxy, nitro, chloro, bromo and fluoro, and nontoxic, pharmaceutically acceptable acid addition salts thereof, which process comprises reacting a compound of the formula



II

wherein R^1 and R^2 are as defined above, and R^3 is hydrogen, (lower)alkyl, phenyl or substituted phenyl, in an inert organic solvent, with about an equimolar amount of a compound of the formula

III

or an acid addition salt thereof, wherein X is a leaving group selected from amino, SR^4 in which R^4 is (lower)alkyl, phenyl or substituted phenyl, and a heterocyclic ring or substituted heterocyclic ring selected from pyrrole, pyrazole, imidazole, triazole, tetrazole, indole and benzimidazole, which is attached via its 1-position to the carboxamidine moiety.

4,208,522

SUBSTITUTED PIPERAZINE DIONES

Chester E. Ramey, Spring Valley, and John J. Luzzi, Carmel, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

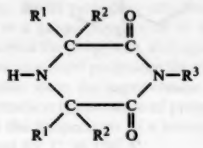
Continuation of Ser. No. 835,759, Sep. 22, 1977, Pat. No. 4,125,517, which is a division of Ser. No. 633,202, Nov. 19, 1975, Pat. No. 4,051,137, which is a division of Ser. No. 391,200, Aug. 24, 1973, Pat. No. 3,928,357, and a continuation-in-part of Ser. No. 237,982, Mar. 24, 1972, abandoned. This application Oct. 6, 1978, Ser. No. 949,173

The portion of the term of this patent subsequent to Dec. 23, 1992, has been disclaimed.

Int. Cl.² C07D *241/08*

U.S. Cl. 544—385 **2 Claims**

1. A compound of the formula



wherein R^1 and R^2 are independently of each other methyl or ethyl, and R^3 is benzyl.

4,208,523

11-LOWER-ALKYL-, 11-PHENYL-LOWER-ALKYL- AND 11-CYCLO-LOWER-ALKYL-LOWER-ALKYL-HEXAHYDRO-2,6-METHANO-3-BENZAZOCINES

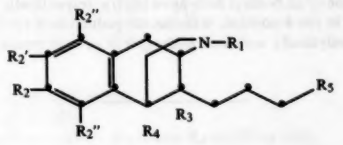
William F. Michne, Poestenkill, and Thomas R. Lewis, Bethlehem, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Nov. 30, 1978, Ser. No. 964,915

Int. Cl.² C07D *221/26*

U.S. Cl. 546—97 **20 Claims**

1. A member of the group consisting of (A) compounds having the formula



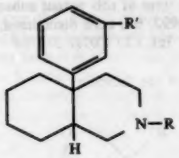
where R_1 is lower-alkyl, lower-alkenyl, cyclo-lower-alkyl-lower-alkyl, hydrogen or benzyl; one of R_2, R_2', R_2'' and R_2''' is hydroxy, lower-alkoxy, methoxymethoxy, benzyloxy or lower-alkanoyloxy, the others being hydrogen; R_3 is hydrogen or lower-alkyl; R_4 is lower-alkyl, or R_3 and R_4 together represent lower-alkylene, $(CH_2)_n$, where n is one of the integers 3 or 4; and R_5 is lower-alkyl containing from three to six carbon atoms, phenyl, phenyl-lower-alkyl, cyclo-lower-alkyl or cyclo-lower-alkyl-lower-alkyl, or such phenyl and phenyl-lower-alkyl groups substituted in the phenyl ring by a lower-alkyl group, and (B) acid-addition salts thereof with the proviso that R_3 and the group $(CH_2)_3R_5$ are dissimilar.

4,208,524
N-ALKENYL DECAHYDROISOQUINOLINES

Dennis M. Zimmerman, Indianapolis, and Winston S. Marshall, Bargersville, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed May 7, 1974, Ser. No. 467,707
Int. Cl.[2] C07D *217/16;* A61K *31/47*
U.S. Cl. 546—144 7 Claims

1. A compound of the formula:



wherein
R is

R′ is O-alkyl or OH;
R″ and R‴are, separately, H, methyl or ethyl; alkyl is (C_1–C_3) alkyl; and
alken is (C_2–C_5 alkenyl, the total number of carbon atoms in R being less than 7.

4,208,525
REDUCTION OF 4-OXO-TETRAALKYLPIPERIDINES

Michael Rasberger, Riehen, and Peter Baumeister, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 5, 1977, Ser. No. 857,485
Claims priority, application Switzerland, Dec. 9, 1976, 15500/76
Int. Cl.[2] C07D *211/12, 211/14*
U.S. Cl. 546—184 8 Claims

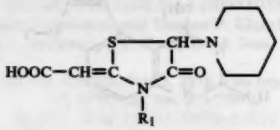
1. Process for the reduction of 4-oxo-2,2,6,6-tetraalkylpiperidine, or an N-alkyl derivative thereof, to 2,2,6,6-tetraalkylpiperidine or an N-alkyl derivative theory, respectively, unsubstituted in the 4-position, wherein the reduction is carried out with catalytically activated hydrogen in an acid medium.

4,208,526
PROCESS FOR THE PREPARATION OF THIAZOLIDIN-4-ONE-ACETIC ACID DERIVATIVES

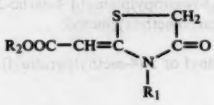
Wolfgang Herrmann, Merzhausen, and Gerhard Satzinger, Denzlingen, both of Fed. Rep. of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jan. 19, 1979, Ser. No. 4,797
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1978, 2802387
Int. Cl.[2] C07D *417/04*
U.S. Cl. 546—209 7 Claims

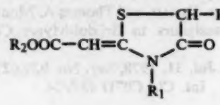
1. A process for the preparation of a thiazolidin-4-one-acetic acid of the formula:



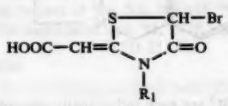
in which R_1 is an alkyl radical containing up to 3 carbon atoms, wherein a compound of the formula:



in which R_1 has the same meaning as above and R_2 is an alkyl radical containing 3 to 6 carbon atoms, is reacted at a low temperature in an inert solvent of low polarity with at least an equimolar amount of bromine and the compound thus obtained of the formula:



in which R_1 and R_2 have the same meanings as above, is subjected in situ to an ester-splitting by the action of the hydrogen bromide present in the reaction mixture and the compound thus obtained of the formula:



in which R_1 has the same meaning as above, is, without isolation, reacted with at least an equivalent amount of piperidine.

4,208,527
PROCESS FOR THE MANUFACTURE OF HIGH MOLECULAR WEIGHT POLY-(ETHYLENE TEREPHTHALATE)

Gernot Horlbeck, Dorsten; Klaus Burzin, and Roland Feinauer, both of Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Huls, Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Mar. 12, 1979, Ser. No. 19,673
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2811982
Int. Cl. C08G *63/14*
U.S. Cl. 528—279 11 Claims

1. In a process for preparing high molecular weight poly-(ethylene terephthalate) in two stages, comprising, in the first stage, reacting a dialkyl ester of terephthalic acid with ethylene glycol in the presence of 35 to 290 ppm of manganese, in the form of a manganese-II salt effective as a catalyst, together with 6 to 95 ppm of cobalt, in the form of a cobalt-II salt effective as a catalyst, at a temperature of 170°–220° C. to give a low molecular weight precondensate; then adding 45 to 140 ppm of phosphorus in the form of a phosphorus compound effective to minimize discoloration of the product poly-(ethylene terephthalate) due to said transesterification catalysts; and, in the second stage, effecting complete condensation of the

precondensate thus obtained, in the presence of catalysts at a temperature of 270°–290° C. and under low pressure, to give high molecular weight poly-(ethylene terephthalate),

the improvement wherein the second stage, 115 to 230 ppm of germanium, in the form of a germanium-IV salt effective as a catalyst, and 2 to <20 ppm of titanium, in the form of a titanium-IV salt effective as a catalyst, all quantity data for the catalyst components being based on the weight parts of terephthalic acid units, are added to the reaction mixture as the catalysts.

4,208,528

PROCESS OF PREPARING FINELY DIVIDED THERMOPLASTIC RESINS

Dorothee M. McClain, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Aug. 17, 1978, Ser. No. 934,646

Int. Cl.[2] C08F *6/24*

U.S. Cl. 528—487 **3 Claims**

1. A process for preparing in finely divided form a solid thermoplastic polyolefin resin which comprises:

(a) agitating a mixture of the resin while in the molten state, a dispersion-forming amount of water, and a dispersion-forming amount of an alkali metal salt of an organophosphate ester dispersing agent, to provide a hot aqueous dispersion of the resin; and,

(b) cooling the dispersion to below about 100° C. to provide solid particles of resin.

2. A process for preparing in finely divided form a solid thermoplastic polyolefin which comprises:

(a) agitating a mixture of the resin while in the molten state, a dispersion-forming amount of water, a base and a dispersion-forming amount of an alkali metal salt of an organophosphate ester dispersing agent in the presence of a base to regulate the particle size distribution of the dispersed resin; and,

(b) cooling the dispersion to below about 100° C. to provide solid particles of resin of controlled particle size distribution.

4,208,529

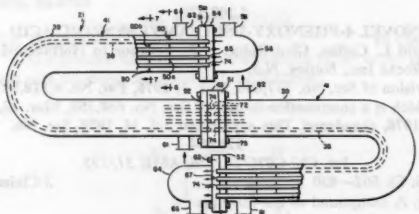
HEAT EXCHANGER SYSTEM

Ronald M. Murray, Cambridge, Mass., assignor to The Badger Company, Inc., Cambridge, Mass.

Division of Ser. No. 868,990, Jan. 12, 1978, Pat. No. 4,156,457. This application Oct. 26, 1978, Ser. No. 954,821

Int. Cl.[2] C08F *6/10*

U.S. Cl. 528—501 **2 Claims**



1. In a method of catalytically polymerizing olefins in which the reaction mass comprises polyolefin dissolved in liquid solvent therefor and in which the reaction mass is flowed through the tubes of a tubular heat exchanger to heat it to a temperature at which the liquid solvent can be removed from the reaction mass as a vapor, the improvement comprising so heating said reaction mass by passing it through a plurality of continuous uninterrupted sinuous-shaped heat exchanger tubes located side by side in a sinuous-shaped shell forming continuous uninterrupted sinuous-shaped pathways.

4,208,530

PROCESS FOR THE RECOVERY OF ATACTIC POLYMERS

Kiyoshi Matsuyama, Niihama, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 26, 1978, Ser. No. 973,292

Claims priority, application Japan, Dec. 28, 1977, 52-159372; Feb. 14, 1978, 53-16082

Int. Cl.[2] C08F *6/26*

U.S. Cl. 528—501 **12 Claims**

1. In a process for the recovery of an atactic polymer which comprises heating liquid propylene containing the dissolved atactic polymer at a gauge pressure of 13 to 40 kg/cm^2 in a vaporizer to vaporize the propylene, and separating the atactic polymer from the vaporized propylene thereby recovering the polymer in a molten state, the improvement comprising maintaining the vaporization temperature of propylene at about 45° C. to 90° C. and the temperature of a heating medium for the vaporizer at about 60° C. to 150° C.

4,208,531

SYNTHETIC AMINOGLYCOSIDES

Antonio Canas-Rodriquez, 8 Saint Martin's Pl., Canterbury, England (CT1 1QD)

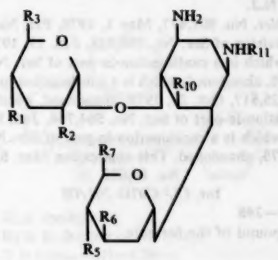
Filed Jun. 8, 1977, Ser. No. 804,756

Claims priority, application United Kingdom, Jun. 10, 1976, 24002/76; Nov. 2, 1976, 45492/76

Int. Cl.[2] A61K *31/71*; C07H *15/22*

U.S. Cl. 536—17 R **8 Claims**

1. A compound of the formula:



wherein

R_1 is H, F, OH or SH;

R_2 is H or NH_2;

R_3 is H or $—CH_2—R_4$ where R_4 is OH or NH_2;

provided that when R_1 is H, R_3 is $—CH_2—NH_2$, and when R_3 is H or $—CH_2—OH$ R_1 is NH_2;

R_5 is H, OH, SH or halogen;

R_6 is H, OH or NHR_8 where R_8 is H or Me;

R_7 is H or $—CH_2—R_9$ where R_9 is H, OH or NH_2;

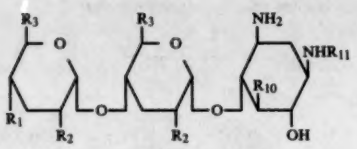
provided that when R_6 is H or OH, R_7 is $—CH_2—NH_2$ and when R_8 is H or $—CH_2—OH$, R_6 is NH R_8;

R_{10} is H or OH; and

R_{11} is H, CH_3 or $—CO—CHOH—CH_2—CH_2NH_2$;

and the pharmaceutically acceptable acid addition salts thereof.

4. A compound of the formula:



wherein

R_1 is H, F, OH or SH;

each R_2 is independently H or NH_2;

each R_3 is independently H or $—CH_2—R_4$ where R_4 is OH or NH_2;

provided that, in the terminal saccharide ring when the R_2 is H, the R_3 is CH_2NH_2 and when the R_3 is H or CH_2OH, the R_2 is NH_2;

R_{10} is H or OH; and

R_{11} is H, CH_3 or $—CO—CHOH—CH_2—CH_2—NH_2$;

and the pharmaceutically acceptable acid addition salts thereof.

4,208,532

5-PHENACYL-3-PHENYL-4-ISOXAZOLE CARBOXAMIDES

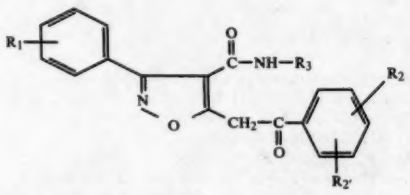
Jeffrey Nadelson, Denville, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Division of Ser. No. 901,477, May 1, 1978, Pat. No. 4,158,735, which is a division of Ser. No. 760,818, Jan. 19, 1977, Pat. No. 4,103,013, which is a continuation-in-part of Ser. No. 719,231, Aug. 31, 1976, abandoned, which is a continuation-in-part of Ser. No. 625,817, Oct. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 584,764, Jun. 9, 1975, abandoned, which is a continuation-in-part of Ser. No. 558,419, Mar. 14, 1975, abandoned. This application Mar. 8, 1979, Ser. No. 18,621

Int. Cl.[2] C07D *261/08*

U.S. Cl. 548—248 **1 Claim**

1. A compound of the formula



where

R_1, R_2 and R_2' each, independently represents represent hydrogen, halo having an atomic weight of about 19 to 36, lower alkyl having 1 to 4 carbon atoms, lower alkoxy having 1 to 4 carbon atoms or trifluoromethyl and

R_3 represents lower alkyl as defined above.

4,208,533

SYNTHESIS OF CYCLOPENTANOL

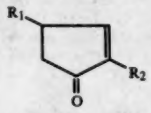
Frank Kienzle, Therwil, Switzerland, and Perry Rosen, North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 613,652, Sep. 15, 1975, Pat. No. 4,089,889, which is a division of Ser. No. 381,322, Jul. 20, 1973, abandoned, which is a continuation-in-part of Ser. No. 300,633, Nov. 25, 1972, abandoned. This application Feb. 23, 1978, Ser. No. 880,670

Int. Cl.[2] C07C *69/74, 49/46*

U.S. Cl. 560—122 **2 Claims**

1. A compound of the formula:



wherein R_1 is lower alkyl or carboxy esterified with lower alkyl or benzyl; and R_2 is 2-propenyl.

4,208,534

PROCESS FOR PREPARING ETHYLENE GLYCOL ESTERS

Jawad H. Murib, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Dec. 26, 1978, Ser. No. 972,855

Int. Cl.[2] C07C *67/05*

U.S. Cl. 560—246 **9 Claims**

1. A process for preparing ethylene glycol esters which comprises reacting ethylene, oxygen and a C_2 to C_8 carboxylic acid in the vapor phase at a pressure above about 40 psig in the presence of a catalytically effective amount of a catalyst consisting essentially of an oxide of uranium and at least one oxide selected from the group consisting of arsenic, antimony and bismuth oxides.

4,208,535

NOVEL 4-PHENOXY-5-SULFAMYLBENZOIC ACID

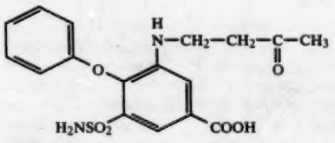
David L. Coffen, Glen Ridge, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 737,630, Nov. 1, 1976, Pat. No. 4,118,587, which is a continuation-in-part of Ser. No. 668,758, Mar. 22, 1976, abandoned. This application Jul. 14, 1978, Ser. No. 925,004

Int. Cl.[2] C07C *143/78;* A61K *31/195*

U.S. Cl. 562—430 **2 Claims**

1. A compound of the formula:



or pharmaceutically acceptable salts thereof.

4,208,536

HYDROXYLATION OF AROMATIC COMPOUNDS

Michel Costantini, Lyons; Adrien Dromard, Paris; Michel Joufret, Francheville le Bas, and Roland Nantermet, Lyons, all of France, assignors to Rhone-Poulenc Industries, Paris, France

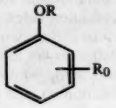
Filed Dec. 21, 1976, Ser. No. 752,903

Claims priority, application France, Dec. 24, 1975, 75 40382

Int. Cl.[2] C07C *37/00, 39/08*

U.S. Cl. 568—771 20 Claims

1. In a process for hydroxylating an aromatic compound of the general formula:



in which R and R_o, which may be the same or different, represent a hydrogen atom or an alkyl radical of from 1 to 4 carbon atoms, wherein said aromatic compound is reacted in the liquid phase at 20° to 150° C. with hydrogen peroxide in an amount such that the molecular ratio of hydrogen peroxide to the aromatic compound is less than 0.3 in the presence of a catalytic amount of a strong acid having a pK H_2O value below −0.1 and which is stable to oxidation by hydrogen peroxide, the amounts of hydrogen peroxide and strong acid being such that the ratio of the amount of acid, expressed in proton equivalents, to the number of molecules of hydrogen peroxide taking part in the reaction is at least equal to 1×10^{-4}, the water content, by weight, of the reaction medium being less than 20% of the mixture of aromatic compound, hydrogen peroxide and water, and wherein the reaction is carried out in the presence of an agent which complexes transition metal ions and is stable under the reaction conditions, the improvement which consists of carrying out the reaction in the presence of an activator which is a juxtanuclear aromatic aldehyde or a derivative thereof selected from the group consisting of an acetal and a benzyhydrol.

4,208,537

PROCESS FOR THE SELECTIVE ORTHO-ALKYLATION OF PHENOLIC COMPOUNDS

Motoo Kawamata; Kazushi Ohshima; Akihide Kudoh, and Makoto Kotani, all of Yokohama, Japan, assignors to Mitsui Toatsu Chemicals Incorporated

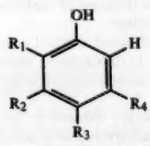
Filed Nov. 27, 1978, Ser. No. 964,262

Claims priority, application Japan, Oct. 31, 1977, 52-129390; Dec. 6, 1977, 52-145630; Dec. 26, 1977, 52-155683; Jan. 26, 1978, 53-6733

Int. Cl.[2] C07C *37/16*

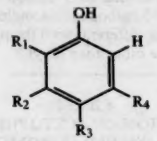
U.S. Cl. 568—804 16 Claims

1. In a process for the selective alkylation of the ortho position of a phenolic compound of the formula



wherein R_1, R_2, R_3 and R_4 independently represent hydrogen atoms or saturated aliphatic hydrocarbon radicals having from 1 to 4 carbon atoms, by the catalytic reaction of said phenolic compound with a saturated aliphatic alcohol having from 1 to 4 carbon atoms, in the vapor phase, the improvement which comprises reacting at a temperature of from 250° C. to 550° C. said phenolic compound with said alcohol in a molar ratio ranging from 1:1 to 1:15 in the presence of a catalyst containing chromium oxide and tin oxide and having a Cr:Sn atomic ratio of from 100:0.1 to 100:60.

14. A process for the selective alkylation of the ortho position of a phenolic compound of the formula



where R_1, R_2, R_3 and R_4 independently represent hydrogen atoms or saturated aliphatic hydrocarbon radicals having from 1 to 4 carbon atoms, by reaction of said phenolic compound with a saturated aliphatic alcohol having from 1 to 4 carbon atoms, in the vapor phase, which comprises reacting the phenolic compound with the alcohol in a molar ratio ranging from 1:1 to 1:15 in the presence of a catalyst having an active substance selected from the group consisting of Cr_2O_3-SnO_2 of a Cr:Sn atomic ratio ranging from 100:0.1 to 100:60, Cr_2O_3-SnO_2-Fe_2O_3 of a Cr:Sn:Fe atomic ratio ranging from 100:0.1:0.01 to 100:60:20, Cr_2O_3-SnO_2-SO_4— of a Cr:Sn:S atomic ratio ranging from 100:0.1:0.25 to 100:60:20 and Cr_2O_3-SnO_2-Fe_2O_3-SO_4— of a Cr:Sn:Fe:S atomic ratio ranging from 100:0.1:0.01:0.25 to 100:60:20:20, at a temperature of from 250° C. to 550° C.

4,208,538

2-DECARBOXY-2-HYDROXYMETHYL-3,7-INTER-M-PHENYLENE-ω-PHENYL-PGF$_2$ COMPOUNDS

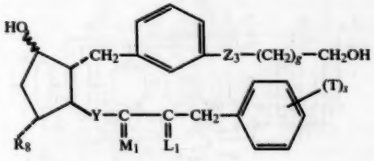
Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 822,032, Aug. 5, 1977, which is a division of Ser. No. 647,357, Jan. 8, 1976, Pat. No. 4,055,602. This application Jan. 3, 1978, Ser. No. 866,598

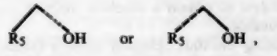
Int. Cl.[2] C07C *35/21*

U.S. Cl. 568—807 39 Claims

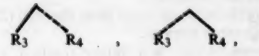
1. A prostaglandin analog of the formula



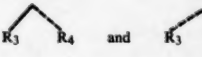
wherein Z_3 is methylene;
wherein R_8 is hydrogen or hydroxy;
wherein Y is trans—CH=CH—;
wherein M_1 is



wherein R_5 is hydrogen or methyl;
wherein L_1 is



or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl;

wherein g is one, 2, or 3; and

wherein s is zero, one, 2, or 3 and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl.

4,208,539

HYDROGENATION OF ACETOPHENONE USING BARIUM-COPPER CHROMITE-ZINC

Jay A. Rashkin, Piscataway, N.J., assignor to Halcon Research and Development Corporation, New York, N.Y.

Division of Ser. No. 908,610, May 23, 1978, Pat. No. 4,160,746. This application May 4, 1979, Ser. No. 35,886

Int. Cl.² C07C *31/14*

U.S. Cl. 568—814 **2 Claims**

1. A process for the hydrogenation of acetophenone to phenyl methyl carbinol by contacting said acetophenone with at least one mol of hydrogen for each mol of acetophenone over a fixed bed of catalyst pellets at temperatures in the range of about 50° C. to 200° C. and pressures in the range of about 20 kg/cm² gauge to 140 kg/cm² gauge wherein the composition of said catalyst pellets expressed as oxides consists essentially of: (a) a barium-copper chromite containing 30–55% by weight CuO, 30–57% by weight Cr_2O_3, and up to 16% by weight BaO; and (b) 1—13% by weight ZnO, relative to 100% by weight of said barium-copper chromite.

4,208,540

PROCESS FOR SEPARATION AND RECOVERY OF ISOBUTENE

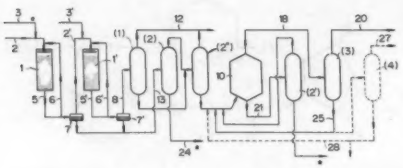
Masao Imaizumi, Tokyo; Mitsuo Yasuda, Hiroshima; Ko Sakata, Tokyo, and Noboru Hirano, Yokohama, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed May 29, 1979, Ser. No. 43,186

Claims priority, application Japan, Dec. 22, 1978, 53/160792; Feb. 14, 1979, 54/15859

Int. Cl.² C07C *7/01*

U.S. Cl. 585—809 **14 Claims**



1. A process for the continuous separation and recovery of isobutene comprising the steps of:

(1) contacting an isobutene-containing hydrocarbon mixture with water in the presence of a cation exchange resin as the catalyst to obtain a reaction mixture containing tertiary butanol,

(2) separating the thus obtained tertiary butanol-containing mixture into a hydrocarbon layer and an aqueous layer,

(3) distilling the hydrocarbon layer to recover the unreacted hydrocarbons as the top and obtain a tertiary butanol-rich stream as the bottoms,

(4) distilling the aqueous layer from the step (2) to obtain the following three streams:

(i) a stream, which is a lighter fraction, containing the unreacted hydrocarbons which remained in said aqueous layer,

(ii) a tertiary butanol-rich stream, and

(iii) a water-rich stream,

(5) introducing the tertiary butanol-rich stream from the step (3) and the tertiary butanol-rich stream (ii) from the step (4) continuously into a dehydration reactor containing a cation exchange resin catalyst and a liquid mixture of 20–70 wt.% of tertiary butanol with water at a temperature of 90°–180° C. and a pressure of 1.5–15 Kg/cm²G, to effect the dehydration of the tertiary butanol,

(6) withdrawing a mixture of gaseous isobutene, gaseous unreacted tertiary butanol and steam continuously from the top of said dehydration reactor,

(7) introducing the thus withdrawn gaseous mixture from step (6) into a distillation tower to recover isobutene as the product therefrom at the top while recycling at least a part of the remaining fraction to said dehydration reactor in step (5),

(8) withdrawing continuously from said dehydration reactor a part of the liquid mixture of the unreacted tertiary butanol and water contained therein and

(9) subjecting the thus withdrawn liquid mixture of step (8) to distillation in a distillation tower to withdraw a liquid stream from the bottom of said tower containing the major portion of the water in said mixture and to separate from the top of said tower a mixture containing a major portion of tertiary butanol and a minor portion of water, and said mixture of butanol and water being recycled to said dehydration reactor.

4,208,541

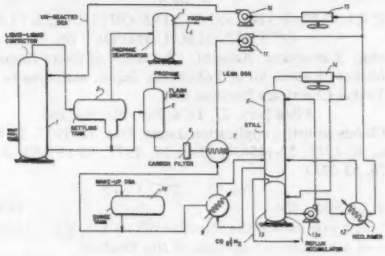
METHOD FOR THE REMOVAL OF CARBONYL SULFIDE FROM LIQUID PROPANE

George McClure, 2401 Seaboard, Midland, Tex. 79701, assignor to George McClure, Midland and David C. Morrow, Odessa, both of, Tex.

Continuation-in-part of Ser. No. 749,464, Dec. 10, 1976, abandoned. This application May 19, 1978, Ser. No. 907,602

Int. Cl.² C07C *7/00*

U.S. Cl. 585—860 **5 Claims**



1. A method for the removal of carbonyl sulfide from liquid propane, which comprises:

mixing, under liquid-liquid contact conditions;

(a) a stream of hydrocarbons consisting essentially of liquid propane containing carbonyl sulfide as an impurity; and

(b) 2-(2-aminoethoxy) ethanol in an amount effective to remove substantially 100% of said carbonyl sulfide, at a temperature and pressure effective to retain said stream in the liquid state; and

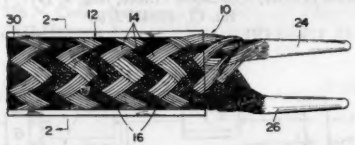
removing said stream from the system.

4,208,542

CABLE FOR PARTICULAR USE WITH LOUDSPEAKERS

Shin Endo, Tokyo, Japan, assignor to Toko Tokushu Densen Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 756,985, Jan. 5, 1977, abandoned. This application Mar. 13, 1978, Ser. No. 885,799
Claims priority, application Japan, Aug. 26, 1976, 51-101096
Int. Cl.[2] H01B 7/00
U.S. Cl. 174—113 C 9 Claims



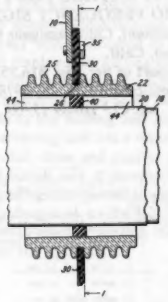
1. A cable for particular use in connecting a loudspeaker system and an amplifier or the like in a module-type high-fidelity sound-reproducing system, comprising a tubular braid having two opposed, helically running sets of strands of individually insulated wires, the two sets of strands of wires being interlaced in such a way that each strand of each set repeatedly passes over two consecutive strands and then under the next two consecutive strands of the other set, and a pair of terminals formed at each extremity of the tubular braid by closely assemblying the end portions of the strands of wires into two predetermined groups.

4,208,543

INSULATING SUPPORT MEANS MOUNTING BUS CONDUCTORS THROUGH AN OPENING IN A GROUNDED METAL WALL

Malachy V. Boyle, Narberth, and Edward J. Dugan, Norwood, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Apr. 17, 1978, Ser. No. 897,089
Int. Cl.[2] H01B 17/26
U.S. Cl. 174—152 R 6 Claims



1. In combination, an assembly including a bus conductor comprising one or more bus bars each having a thin coating of electrical insulating material closely surrounding its exterior, a grounded metal wall having an opening through which said bus conductor extends, and insulating support means mounting said bus conductor on said grounded metal wall, said insulating support means, bus conductor, and grounded metal wall assembly comprising:

(a) a porcelain sleeve mounted on said metal wall within said opening and surrounding said bus conductor and said thin coating, with the inner periphery of said sleeve disposed in spaced relationship to said insulating coating,

(b) a disc of resilient insulating material closely surrounding said bus conductor and positioned between said insulating coating and the inner periphery of said porcelain sleeve, said disc having an axial length much shorter than said porcelain sleeve and being spaced axially from both ends of said sleeve, said resilient disc being yieldable in response to short-circuit forces and having sufficient energy-absorbing capacity during such yielding to materially reduce the peak forces transmitted to said porcelain sleeve under short-circuit conditions,

(c) the space between said porcelain sleeve and said insulating coating being free of rigid structure mechanically in parallel with said resilient disc that could interfere with yielding of the disc in response to short-circuit forces and resultant reduction in the peak forces transmitted to the porcelain sleeve, and

(d) means mounting said porcelain sleeve on said metal wall comprising a plate of insulating material located externally of said sleeve and disposed in a plane extending generally perpendicular to the longitudinal axis of said sleeve,

(e) said plate having an opening receiving said porcelain sleeve and a portion surrounding said opening fitting within a notch in the exterior of said sleeve, and

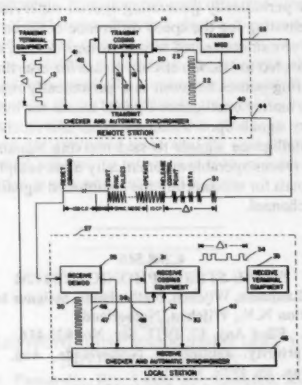
(f) said disc of resilient insulating material being disposed in substantially the same plane as said plate.

4,208,544

CHECKER AND AUTOMATIC SYNCHRONIZER FOR CODING EQUIPMENT

William G. Burke, Jr., Hyattsville, Md., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Oct. 4, 1961, Ser. No. 142,920
Int. Cl.[2] H04M 3/22; H04L 9/00
U.S. Cl. 178—22 6 Claims



1. A one way communication system comprising means for transmitting coded pulse data and synchronizing pulses from a transmitter to a receiver having a source of clock pulses, monitoring means connected to the receiver and responsive continuously to received data for producing an output signal indicative of a malfunction in said system, control means having an input connected to said monitoring means and having an "ON" condition output responsive to said monitoring means output signal and an "OFF" condition output, receiver adjusting means having an input connected to said monitoring means and an output connected to said receiver for readjusting said receiver responsive to said monitoring means output signal, transmitter adjusting means having its output connected to said transmitter for readjusting and instituting corrective action on the transmitter including the blocking of data transmission and the initiation of the transmission of synchronization pulses responsive at its input to the "ON" condition of said control means, a return line connecting the output of said control

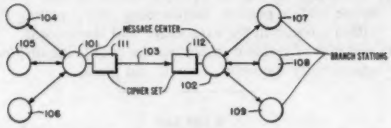
means to the input of said transmitter adjusting means, and means connecting said receiver to said control means for turning said control means to the "OFF" condition when the malfunction indicated by the output signal of the monitoring means has been corrected, said means for turning the control means "OFF" including means for delaying the turning off of the control means until a predetermined number of pulses free of the effects of the malfunction are received without interruption.

4,208,545

SECRECY SYSTEM

Walter J. Zenner, Des Plaines, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed May 24, 1954, Ser. No. 431,798
Int. Cl.[2] H04L *9/00*
U.S. Cl. 178—22 **12 Claims**



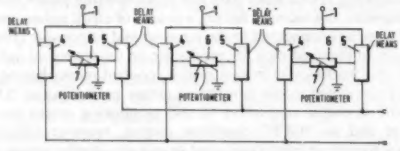
1. In a system of secret telegraph communication, an incoming channel over which miscellaneous matter intelligence signals are periodically received, an outgoing channel susceptible of operating at a higher speed than said incoming channel, a cipher unit interconnecting said channels, said unit comprising a signal storage device, means controlled by said storage device for periodically generating special supervisory signals for compensating for the speed difference between said channels, a fan circuit connected to said storage device, a ciphering maze connected to said fan circuit, means for inserting masking signals during pauses between said periodically received miscellaneous matter intelligence signals, means for inserting said supervisory signals upon transitions from said received miscellaneous intelligence signals to said masking signals and vice versa, and means operable automatically upon encipherment of all said signals for transmitting the enciphered signals over said outgoing channel.

4,208,546

PHASE STEREOPHONIC SYSTEM

Robert R. Laupman, Wijchen, Netherlands, assignor to Novanex Automation N.V., Wijchen, Netherlands

Filed Aug. 17, 1977, Ser. No. 825,416
Claims priority, application Netherlands, Aug. 17, 1976, 7609130; Jan. 25, 1977, 7700737
Int. Cl.[2] H04R *5/04*
U.S. Cl. 179—1 GP **4 Claims**



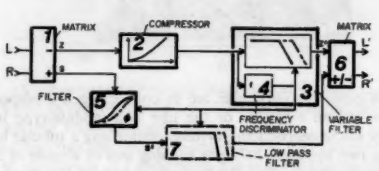
1. A system for reproducing stereophonic signals, comprising a plurality of inputs connectable to a corresponding plurality of audio sources, said inputs being each connected through two paths to respective outputs each connectable to an associated reproducing device, each of said two paths associated with an input including frequency-dependent phase-shifting means, and a potentiometer interconnecting the phase-shifting means of said two paths, said potentiometer having its sliding contact connected to a point of reference potential.

4,208,547

METHOD AND APPARATUS FOR REDUCING NOISE IN STEREOPHONIC SIGNALS

Bernard J. Simeau, 9, rue des Cites-Chadrac, 43000 Le Puy, France

Filed Aug. 2, 1978, Ser. No. 930,365
Claims priority, application France, Aug. 9, 1977, 77 24495
Int. Cl.[2] H04H *5/00*
U.S. Cl. 179—1 GD **13 Claims**



1. Apparatus for reducing noise in a multi-channel stereo signal which includes a main signal portion and a composite signal portion comprising

first and second separate signal processing channels having respectively different transmission characteristics,

means connecting said main signal portion of said stereo signal to said first channel,

means connecting said composite signal portion of said stereo signal to said second channel, and

an adaptative filter connected in one of said channels

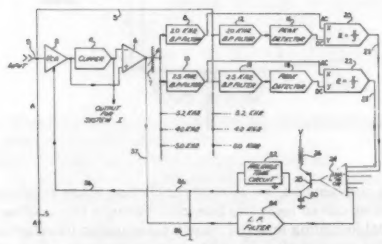
said adaptative filter having a transfer function which varies in response to the content of the signal portion applied to the channel in which said adaptative filter is connected.

4,208,548

APPARATUS AND METHOD FOR PEAK-LIMITING AUDIO FREQUENCY SIGNALS

Robert A. Orban, Belmont, Calif., assignor to Orban Associates, Inc., San Francisco, Calif.

Continuation-in-part of Ser. No. 816,955, Jul. 19, 1977, abandoned. This application Oct. 27, 1978, Ser. No. 955,322
Int. Cl.[2] H04B *15/00*
U.S. Cl. 179—1 VL **29 Claims**



1. An apparatus for controlling peak levels of an input signal comprising:

controllable clipping means for clipping said input signal, the amount of said clipping controlled by a control signal applied to said clipping means;

distortion determining means for determining the amount of distortion introduced by said clipping means, said distortion determining means coupled to said clipping means;

control means for generating said control signal, said control

means coupled to said distortion means and coupled to receive said input signal;

whereby peak levels of said input signal at the output of said clipping means are controlled by controlling the amount of said clipping.

4,208,549

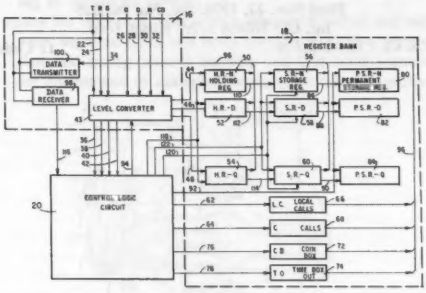
COIN SURVEILANCE APPARATUS

William M. Polillo, 1003 N. Broad, Galesburg, Ill. 61401; Martin L. Bray, 437 E. Coal, Wataga, Ill. 61488; Richard W. Reno, 336 N. Cedar, Galesburg, Ill. 61401, and Albert J. La Mere, 7827 Hohman Ave., Munster, Ind. 46321

Filed Jun. 29, 1978, Ser. No. 920,451

Int. Cl.[2] H04M *17/00*

U.S. Cl. 179—6.3 R **17 Claims**



1. A coin surveillance apparatus that monitors the amount of coins deposited into a plurality of remote coin receiving machines, each said machine having a coin box, and transmits data from said plurality of remotely positioned machines to a central office, wherein said coin surveillance apparatus is operative when said machines are in either a pre-pay or post-pay mode, said apparatus comprising:

a plurality of monitoring units, each having a non-volatile memory and located with and coupled directly to each of said plurality of machines, respectively, each said unit having a unique number identification stored therein;

a polling and display unit positioned in said central office, said polling and display unit having means to interrogate each of said plurality of monitoring units to cause said data and said number identification to be transmitted from said monitoring units to the polling and display unit;

whereas, each monitoring unit has a register bank containing a plurality of nickel, dime and quarter registers, a receptacle collection counter and a receptacle time-out second counter; the plurality of registers storing the current revenue deposited subsequent to the last collection; and the receptacle time-out counter storing the time the coin box is removed from the apparatus.

4,208,550

MAGNETIC PARALLEL-TO-SERIAL CONVERTER FOR GAS TURBINE ENGINE PARAMETER SENSOR

Robert P. Wanger, Fairfield, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Mar. 3, 1978, Ser. No. 883,071

Int. Cl.[2] H04J *3/04*; H03K *13/00*

U.S. Cl. 370—113 **11 Claims**

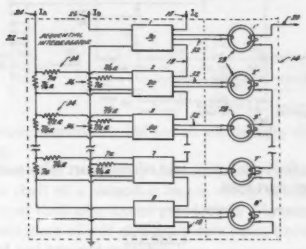
1. In a gas turbine engine control system having a plurality of sensors disposed at locations which are subject to extreme variations in temperature, said sensors providing parallel digital signals which are indicative of various engine parameters, said control system further including a control unit which responds to said digital signals and develops control signals for controlling the operation of said engine, the improvement comprising means for converting said parallel digital signals into serial signals for transmission to said control unit, said converting means including:

(a) a plurality of encoder magnetic cores for storing sensed digital information, said magnetic cores being disposed in the immediate vicinity of said sensors and being subject to said extreme variations in temperature;

(b) a plurality of magnetic elements located at each sensor, each element being connected to a corresponding one of said encoder magnetic cores;

(c) means serially connected with all of said magnetic elements for supplying an excitation current thereto;

(d) first and second current dividing networks located at each sensor; and



(e) means for providing a first electrical current signal to the first of said networks and a second electrical current signal to the second of said networks,

each of said current dividing networks being connected to said magnetic elements in a manner such that the simultaneous application of said first and second electrical current signals to the first and second current dividing networks respectively will result in normally maintaining the magnetic elements in saturation while sequentially unsaturating individual magnetic elements in order to correspondingly sequentially transmit an interrogation current to said encoder magnetic cores, said interrogation current being generated by said excitation current and being adapted to interrogate said encoder magnetic cores in order to provide said serial signals.

4,208,551

TELEPHONE LINE BANK AUXILIARY LINE SWITCHING CIRCUIT

Thomas M. Passarella, Rte. 1-Box 357, Florence, Ala. 35630

Filed Oct. 26, 1978, Ser. No. 955,018

Int. Cl.[2] H04Q *1/14*

U.S. Cl. 179—98 **10 Claims**

1. In telephone XY switching equipment having a main distributor frame and a least one wire bank with a row of idle pins, and an allotter start lead, an auxiliary line switching circuit device comprising:

(a) a bracket mountable on said main distributor frame,

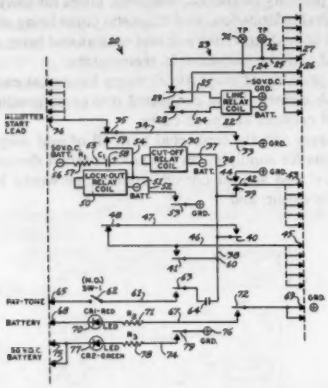
(b) a circuit board attached to said bracket,

(c) at least one miniaturized auxiliary circuit on said circuit board,

(d) said auxiliary circuit comprising a line relay circuit including a miniaturized line relay coil and a cut-off switch in series, and connector means for connecting said line relay circuit to a wire bank, with a row of idle pins,

(e) said auxiliary circuit further comprising a miniaturized cut-off relay coil for opening said cut-off switch when said cut-off relay coil is energized,

(f) said auxiliary circuit comprising an allotter start relay switch controlled by said line relay coil, and connector



means for connecting said allotter start relay switch to the allotter start lead.

4,208,552

MALFUNCTION-DETECTING EQUIPMENT FOR REAL-TIME SUPERVISION OF CENTRAL-OFFICE CIRCUITS IN TELECOMMUNICATION SYSTEM

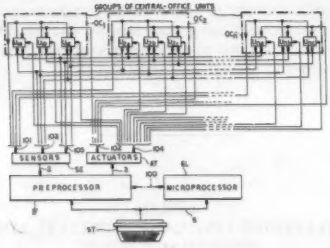
Michele Castriotta; Alfredo de Bosio; Spiridione De Micheli; Günter Lobisch; Franco Manucci, all of Turin, and Pio Semprini, Rome, all of Italy, assignors to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Oct. 20, 1978, Ser. No. 953,161

Claims priority, application Italy, Oct. 21, 1977, 69355 A/77

Int. Cl.[2] H04J *3/14;* **H04M** *3/30;* **G06F** *11/04*

U.S. Cl. 179—175.2 D **6 Claims**



1. In a telecommunication system provided with a multiplicity of circuit components to be monitored for possible malfunctions,

in combination:

a multiplicity of sensors connected to said components for receiving incoming signals therefrom;

a multiplicity of actuators connected to said components for transmitting outgoing signals thereto;

an incoming-signal memory with cells respectively allocated to said components for storing information relating to their operating condition;

an outgoing-signal memory with cells respectively allocated to said components for storing activating commands destined therefor;

processing means provided with connections to said memories for addressing selected cells of said outgoing-signal memory to send activating commands to associated components via the corresponding actuators and reading the contents of corresponding cells of said incoming-signal memory to detect malfunction indications from responses to said commands received via corresponding sensors;

indicator means controlled by said processing means for registering the identity of a component giving rise to a failure indication; and

scanning means connected to said memories for cyclically connecting the cells thereof to associated sensors and actuators in certain phases of respective time slots of a recurrent frame, said connections being available in other phases of said time slots for communication of said memories with said processing means.

4,208,553

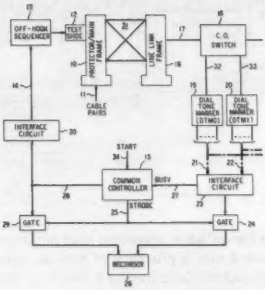
TELEPHONE OFFICE ASSIGNMENT VERIFICATION

Alan E. Kaplan, Parsippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 22, 1978, Ser. No. 963,025

Int. Cl.[3] H04M *3/26;* **H04B** *3/46*

U.S. Cl. 179—175.3 A **12 Claims**



1. A method of verifying the assignment of cable pairs to line equipments in a telephone central office CHARACTERIZED BY the steps of

automatically and sequentially simulating an off-hook condition on said cable pairs,

detecting the identification of said line equipment connected to each of said cable pairs to which dial tone would normally be connected, and

recording an identification of said cable pair and said identification of said line equipment.

4,208,554

IGNITION DISTRIBUTOR ROTOR HAVING A SILICONE VARNISH COATED OUTPUT SEGMENT FOR SUPPRESSING NOISE AND A METHOD OF MANUFACTURE THEREFOR

Richard L. Sprague, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 22, 1978, Ser. No. 963,089

Int. Cl.[2] H01H *19/00;* **F02P** *7/02;* **H01H** *11/00*

U.S. Cl. 200—19 DR **4 Claims**

1. A method for establishing an electrical connection between an ignition distributor rotor output segment and a spring contact member wherein the output segment is coated with a silicone varnish material for effecting the suppression of radio frequency interference radiation and wherein the rotor output segment and the spring contact member are supported by a rotor body member of an insulating material and maintained in clamped engagement over respective surface overlap areas comprising the step of

applying a potential across the said silicone varnish material layer that is between said surface overlap areas of said rotor output segment and said spring contact member of a sufficient level to overstress the dielectric strength of said

silicone varnish material for effecting a rupture of said silicone varnish material layer between said surface overlap areas whereby an electrical arcing connection is established between the surface overlap areas of said rotor output segment and said spring contact member.

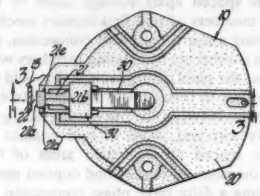
3. A radio frequency interference suppressing ignition distributor rotor of the type adapted to be rotated about its axis within a distributor cap having a plurality of output terminals circumferentially disposed about the rotor axis of rotation comprising:

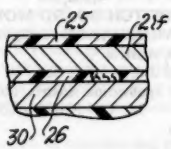
a body member of an electrical insulating material rotatable about an axis of rotation;

an elongated spring contact member of an electrically conductive material;

a rotor segment of an electrically conductive material having an output tip surface;

means for mounting said spring contact member and said rotor segment upon said body member in such a manner that said spring contact member and said rotor segment are maintained in clamped engagement over respective





surface overlap areas with said rotor segment being so positioned that said output tip surfaces thereof extends substantially parallel to said axis of rotation of said body member and, while said rotor segment is rotated with said body member, traces a circular path radially inwardly from said circumferentially disposed distributor cap output terminals by a predetermined distributor arc gap;

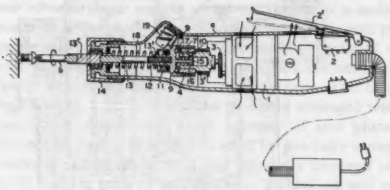
a coating of a thermoset silicone varnish material bonded to substantially the entire surface area of said rotor segment except said output tip surface whereby there is provided an interface between said silicone varnish material and the rotor segment material that is located in close proximity to said output tip surface, said coating being effective to reduce the breakdown potential across said distributor arc gap whereby the radiation of the radio frequency interference generated by an electrical discharge across said distributor arc gap is suppressed; and at least one opening in a portion of said silicone varnish material coating that is in engagement with said spring contact member for providing an electrical arcing conductive path between said rotor segment and spring contact member.

4,208,555

TORQUE CONTROL DEVICE FOR AN ELECTRICALLY-DRIVEN TOOL

Katsuzo Ikeda, and Ikuo Kitagawa, both of Iruma, Japan, assignors to Olympic Fishing Tackles Co., Ltd., Iruma, Japan

Filed Jun. 10, 1977, Ser. No. 805,400
Claims priority, application Japan, Jun. 14, 1976, 51-69904
Int. Cl.[2] H01H *35/00*
U.S. Cl. 200—52 R **5 Claims**



1. A torque control device for an electrically driven tool comprising:

a stationary cam detachably connected to a front end of an output shaft of a reduction means which is connected to an output shaft of a motor provided in a housing, a front end periphery of said stationary cam being provided with spaced and tapered portions;

a movable cam arranged opposite to said stationary cam to engage the latter;

drive engagement means being provided on the inner bottom of the movable cam and in recesses formed between the tapered portions of the stationary cam;

a main shaft being slidably attached in an axial direction to the front portion of the movable cam and being rotatable together with the movable cam, the front end of the main shaft extending through an adjustable screw cover threaded in the front end of the housing;

a projecting end of said main shaft being provided with a tool detachably connected thereto;

a coil spring being compressibly arranged between the front face of the movable cam and the adjustable screw cover to press the movable cam against the stationary cam;

a signal switch positioned adjacent to the front portion of the movable cam for issuing a signal for terminating a supply of electric power to the motor;

said signal switch being operated when it is engaged by forward displacement of the movable cam which is displaced forward when an external force acting on the tool is greater than a predetermined pressure force of the coil spring adjusted by the rotation of the adjustable screw cover; and

engaging means being provided between the movable cam and the output shaft to break a connection between the stationary cam and the output shaft by the forward displacement of the movable cam.

4,208,556

FORCE CONVECTION HEAT PUMP AND TEMPERATURE MEASURING SYSTEM FOR A GAS INSULATED TWO PRESSURE BREAKER

Amrut R. Patel, Brandon, and Donald M. Hansen, Jackson, both of Miss., assignors to Siemens-Allis, Inc., Atlanta, Ga.

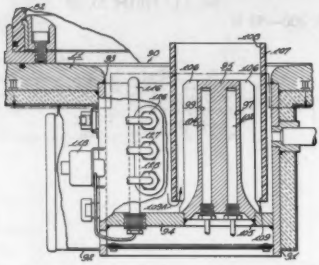
Filed Aug. 22, 1977, Ser. No. 826,873
Int. Cl.[2] H01H *33/54*
U.S. Cl. 200—148 E **6 Claims**

1. In a two-pressure gas circuit interrupter having a low pressure enclosure and a high pressure enclosure including a bottom surface, and provided with a compressor to supply gas under high pressure to the high pressure enclosure,

a heater block fully within and extending upwardly from the bottom surface of the high pressure enclosure;

at least one heater element extending within said heater block;

a tubular chimney disposed about said heater block and spaced therefrom to define a generally vertical space about said heater block, said tubular chimney and heater block cooperating to produce an updraft of heated gas



within said tubular chimney and a downdraft of unheated gas outside tubular chimney; and

temperature sensor means disposed within high pressure enclosure and outside said tubular chimney for sensing the temperature of the unheated gas, said temperature sensor means being isolated from the influence of said heater block.

4,208,557

SWITCHES

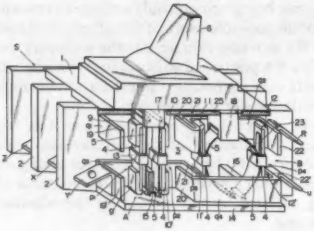
Motomu Miyamoto, 108 House Toritsudai 12-21, 2-Chome, Nakane, Meguro-Ku Tokyo 152, Japan

Filed Aug. 11, 1978, Ser. No. 932,952

Claims priority, application Japan, Aug. 12, 1977, 52-96615

Int. Cl.[2] H01H *1/28*

U.S. Cl. 200—153 R **2 Claims**



1. A switch comprising in combination:

(a) a casing

(b) partition members dividing said casing into three pole chambers,

(c) each pole chamber containing a first contact mechanism for a star three phase connection and a second contact mechanism for a delta three phase connection,

(d) each contact mechanism comprising a pair of spaced apart interior contact members and a pair of spaced apart exterior contact members,

(e) each pair of interior contact members being composed of a pair of vertically disposed spaced apart plates,

(f) a pair of vertically disposed plate springs located between each pair of spaced apart interior contact members, each plate spring being connected intermediate its ends to a vertically disposed plate at a point intermediate its ends, the lower ends of said plate springs being connected to the lower part of said casing,

(g) the upper and lower outwardly facing ends of each of said vertically disposed plates being provided with a contact surface,

(h) each pair of exterior contact members being provided with spaced apart contact areas that are adapted be contacted by a contact surface of a vertically disposed plate,

(i) a vertically movable pressing member attached to the upper ends of each pair of vertically disposed plate springs, which pressing member is adapted to bow its attached plate springs outwardly when pressed downwardly,

(j) a manipulating lever that extends partially outside said casing and partly inside said casing,

(k) a cross bar arrangement connected to the tops of all of said vertically movable pressing members,

(l) a control plate and bearing arrangement interconnecting said cross bar arrangement with said manipulating lever so that the movement of the manipulating lever from one position to another will either

(1) depress one set of pressing members, which in turn will cause the plate springs attached to said set of pressing members to bow outwardly and establish conductive contact between the outwardly facing ends of the vertically disposed plates of said first contact mechanism with the spaced apart contact areas of the exterior contact members of said first contact mechanism, thus establishing a star three phase connection, or

(2) depress another set of pressing members which in turn will cause the plate springs attached to said set of pressing members to bow outwardly and establish conductive contact between the outwardly facing ends of the vertically disposed plates of said contact mechanism with the spaced apart contact areas of the exterior contact members of said second contact members, thus establishing a delta three phase connection, or

(3) depress none of the pressing members so that the switch is in a neutral position.

4,208,558

SWITCH BOARD MOUNT

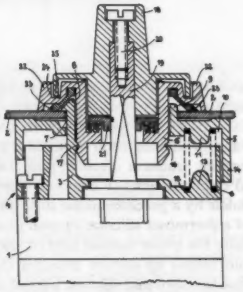
Gottfried Alsch, Vienna, Austria, assignor to Hubert Laurenz Naimer, Vienna, Austria

Filed Jul. 7, 1978, Ser. No. 922,841

Claims priority, application Austria, Jul. 7, 1977, 4895/77

Int. Cl.[2] H01H *9/00*

U.S. Cl. 200—296 **11 Claims**



1. An apparatus for mounting an electrical switch element in a cut-out of an switch board having a front side and a rear side, the switch element having an axially extending portion passing through the cut-out and a body spaced from the rear side of the switch board, which comprises

(a) a support ring between the switch element body and the rear side of the switch board, the support ring surrounding the axially extending switch element portion and

(1) claw elements on the support ring arranged for en-

gagement with the cut-out at the front side of the switch board,

(b) an axially biased housing mounted between the support ring and the rear side of the switch board,

(c) spring means between the support ring and the housing for pressing a circumferential portion of the housing at least partially against the rear side of the switch board, and

(d) a coupling ring inserted between the support ring and the axially extending switch element portion,

(1) the coupling and support rings having radially extending, interengaging rib-and-groove means whereby the coupling ring is held against axial movement by the support ring.

4,208,559

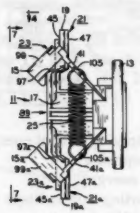
SWITCH ACTUATING DEVICE AND METHOD OF ASSEMBLING

Steven J. Gray, DeKalb, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Dec. 22, 1978, Ser. No. 972,451

Int. Cl.² H01H 9/32

U.S. Cl. 200—329 **20 Claims**



1. A switch actuating device adapted for conjoint rotation with a rotatable assembly generally about an axis of rotation thereof in a prime mover, the device comprising:

means integrally formed of a resin material adapted for mounting engagement on the rotatable assembly and having a hub arranged to extend generally axially in the direction of the rotational axis of the rotatable assembly and a pair of opposite arms arranged to extend generally radially from said hub with respect to the rotational axis of the rotatable member;

said hub including a pair of opposite end portions, an outer peripheral portion between said end portions, a bore extending generally axially through said hub between said opposite end portions and adapted to be press-fitted onto the rotatable assembly, a pair of sets of lands on said peripheral portions and extending generally axially between said opposite end portions with one of said land sets having a configuration different than that of the other of said land sets, and said opposite arms being integrally formed with said hub generally adjacent one of said opposite end portions;

said opposite arms respectively including a pair of opposite surfaces spaced apart from each other generally in the direction of the rotational axis of the rotatable assembly, a pair of opposite marginal edges interposed between said opposite surfaces, a pair of stepped slots in one of said opposite surfaces extending generally radially with respect to said hub with each of said stepped slots having a pair of generally opposed sidewalls, and a pair of abutments on one of said one opposite surface and the other of said opposite surfaces;

a generally annular push collar integrally formed of a resin material and arranged on said hub so as to be axially movable thereon between a retracted position at least adjacent said arm pair and a protracted position generally adjacent the other of said end portions of said hub, said push collar including another bore extending generally axially therethrough and arranged at least in part generally about said peripheral portion on said hub, a pair of sets of grooves in said push collar intersecting with said another bore and extending generally axially thereof so as to be received in axial guiding engagement with said land set pair on said hub and with said groove sets having configurations generally complimentary to those of said land sets, respectively, and a plurality of pairs of angularly disposed abutment surfaces on said push collar defining at least in part a plurality of pivot sections therebetween, respectively;

a pair of centrifugal weight members formed of a metallic material respectively pivotally associated with said push collar and slidably arranged with said arm pair of said mounting means, said centrifugal weight members respectively including a pair of opposite legs with each of said legs having a free end portion pivotally arranged with a respective one of said pivot sections of said plurality thereof on said push collar so as to be pivotally movable between respective ones of said angularly disposed abutment surface pairs of said plurality thereof on said push collar when said push collar is in its protracted and retracted positions, respectively, and a weight section interconnected between said opposite leg pair, said weight section having a pair of stepped extensions disposed in said stepped slot pair of said arm pair, each of said stepped extensions having a pair of opposite side edges received at least in part between said opposed sidewall pair of said stepped slot pair and at least one of said opposite side edge pair being slidable on one of said opposed sidewall pair, and a pair of opposed fingers on said weight sections generally adjacent the interconnection thereof with said leg pairs and slidably received on said other opposite surface of said arm pair generally adjacent said opposite marginal edges thereof, respectively; and

a pair of means associated with adjacent opposite legs of said leg pair on said centrifugal weight members for resiliently urging said free end portions of said legs toward the pivotal arrangement thereof with said respective ones of said pivotal sections on said push collar and also said weight sections of said centrifugal weight member pair toward engagement with said abutment pair on said arm pair of said mounting engagement means.

4,208,560

INDUCTIVELY HEATED GODET

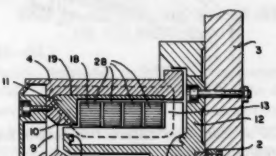
Herbert Turk, Remscheid; Günter Honigmann, Wuppertal-Elberfeld; Gerhard Martens, and Lothar Schewe, both of Remscheid, all of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Remscheid-Lennep, Fed. Rep. of Germany

Continuation of Ser. No. 621,537, Oct. 10, 1975, abandoned. This application Mar. 28, 1978, Ser. No. 891,015

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1974, 7434583[U]

Int. Cl.² H05B 5/08

U.S. Cl. 219—10.49 R **9 Claims**



1. In an inductively heated rotatable godet of the type wherein a stationary primary winding is mounted concentrically to the godet turning axis upon a magnetic core carried by

a body which is fastened to a supporting frame and a rotatable hollow shell, which concentrically surrounds said primary winding, is removably secured to a drive shaft carried by said supporting frame, the improvement comprising:

a magnetic flux conductor having a hollow, substantially rectangular longitudinal cross-section, the inner hollow contour of which surrounds in close proximity said primary winding, said conductor being formed by:

(a) said magnetic core comprising a series of L-shaped laminated plates spaced from said drive shaft and supporting frame to provide a cylindrical core member having in longitudinal section an L-shaped profile with a flask portion extending parallel to said godet turning axis and a foot portion extending radially outwardly from said turning axis along the rear side of said primary winding located closest to said supporting frame,

(b) said hollow shell which is a substantially cylindrical member having in longitudinal section an L-shaped profile with a flank portion extending parallel to the godet turning axis from said supporting frame and a flanged foot portion extending inwardly from said flank portion along the front side of said primary winding located away from said supporting frame, said flanged foot portion forming a circular hole at its inner end into which said flank portion of the magnetic core extends, and

(c) two narrow annular gaps which are located in positions concentric to said godet turning axis, one of which is radially spaced between the outer end of said foot portion of said magnetic core and the opposing flank portion of said hollow shell adjacent to said supporting frame and the other of which is radially spaced between the inner end of said foot portion of said hollow shell and the opposing flank portion of said magnetic core extending into said circular hole; and

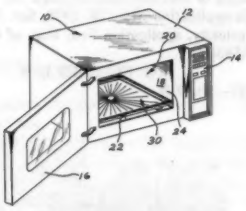
means including said stationary primary winding for generating a magnetic flux field about said conductor, said flux field as viewed in longitudinal section being substantially confined to a path extending through said L-shaped profiles of said magnetic core and said hollow shell and across the two narrow annular gaps formed by the opposing foot ends and flank portions of said shell and core, whereby the heat inductively created by said flux field is concentrated in the flank and foot portions of said hollow shell and away from said drive shaft and supporting frame.

4,208,561

MICROWAVE OVEN SHELF WITH EMBEDDED GRILLE

Edward R. Sitzler, 3402 Barbour La., Louisville, Ky. 40222

Filed May 2, 1978, Ser. No. 902,177
Int. Cl.[2] H05B 9/06
U.S. Cl. 219—10.55 E **12 Claims**



1. A shelf of at least two different materials for use in a microwave oven comprising:

an open grille of rigid high temperature material that is transparent to microwave energy, said grille having closely spaced ribs which form a food container-supporting surface;

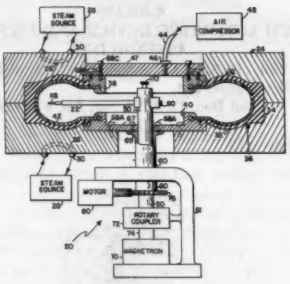
a molded sheet of lower temperature material, that is transparent to microwave energy, in which the said grille is partially embedded so as to form a unitary shelf assembly, the top surface of the grille being raised above the main surface of the molded sheet to space and protect the sheet away from the elevated temperature of the food containers.

4,208,562

CAVITY FEED SYSTEM

Henry W. Perreault, Chelmsford, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Nov. 17, 1978, Ser. No. 962,492
Int. Cl.[2] H05B 9/06
U.S. Cl. 219—10.55 R **5 Claims**



1. A system for applying radiant energy to a material having a cavity therein comprising:

a radiator of said energy;

means for transporting said radiator within said cavity past said material, said transporting means including means for guiding said energy from a point outside said cavity to an interior point of said cavity, said transporting means further including means for coupling the energy from said guiding means to the interior of said radiator; and wherein

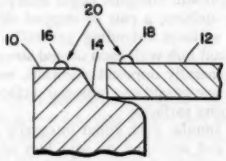
said radiator is formed of an elongated dielectric member for guiding said energy, within said member, from said coupling means to a radiating aperture of said radiator, the permittivity of said dielectric member being greater than the permittivity of said cavity for reducing the wavelength of radiation within said member as compared to such wavelength in said cavity, a cross-sectional dimension of said member being correspondingly reduced to facilitate the entry of said radiator into said cavity.

4,208,563

WELDING METHOD USING A BREAK AWAY FLUX DAM

John G. Frantzreb, Sr., Peoria, and Daniel J. Reinhart, Eureka, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 797,267, May 16, 1977, abandoned. This application Dec. 18, 1978, Ser. No. 970,680
Int. Cl.[2] B23K 9/18
U.S. Cl. 219—73 **9 Claims**



1. In a method of welding a first workpiece to a second workpiece which comprises the steps of abutting said first and

second workpieces against one another in such a manner as to define a generally horizontal weld groove therebetween and electrically welding along said weld groove while adding flux thereto to maintain a slag blanket over a pool of molten weld metal in said groove, an improvement comprising, prior to starting said electrical welding:

adhering a first wire, of a non-flux composition which includes a comminuted refractory material intermixed with a binder in a sufficient amount to bind the material into a contiguous mass and a plasticizer in a sufficient amount to make said mass extrudable, along said first workpiece adjacent and generally parallel to said weld groove; and

adhering a second wire of said composition along said second workpiece adjacent and generally parallel to said weld groove to define a flux dam for retaining said slag blanket between said first and second wires.

4,208,564

NOZZLE STRUCTURE OF ELECTROSLAG WELDING MACHINES

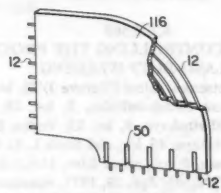
Takeshi Wada; Hisanao Kita; Tetsuo Okuni, all of Hitachi, Japan, and Yoshio Namatame, deceased, late of Hitachi, Japan (by Akemi Namatame, administratrix), assignors to Hitachi, Ltd., Toyko, Japan

Division of Ser. No. 708,210, Jul. 23, 1976, abandoned. This application May 11, 1978, Ser. No. 904,988

Claims priority, application Japan, Jul. 25, 1975, 50-90086

Int. Cl.[2] B23K *25/00*

U.S. Cl. 219—73.1 **15 Claims**



1. A device for using a consumable wire for electroslag welding in a weld gap between the adjacent spaced faces of components to be welded, which weld gap has a molten pool at one end during welding, an opposite end and opposed sides, comprising:

a plurality of nozzle means, each serving both as an electrode and a support through which consumable wire is continuously fed into the molten pool in the weld gap, and each extending from an inlet end and outside of the weld gap through one of the sides of the weld gap to an outlet end immediately adjacent the molten pool, with the outlet ends being spaced along the extent of the molten pool;

means for feeding the consumable wire from the outside of the weld gap into the inlet ends of the nozzle means respectively, through the nozzle means to be guided thereby, and out of the outlet ends of the nozzle means;

means for moving said nozzle means relative to the components so that the outlet ends of the nozzle means within the weld gap will keep pace with the welding process to prevent said nozzle means from melting during welding so that said nozzle means are non-consumable;

means rigidly connecting said plurality of nozzle means to each other to form a rigid nozzle structure so that the plurality of wires are continuously fed through the weld gap in a stable manner to the molten pool;

each of said nozzle means comprising a curved pipe means through which the wire is fed in the weld gap from the one side of the weld gap and said connecting means rigidly connecting all of said curved pipe means parallel to each other in a plane to form a fan-shaped nozzle structure;

said inlet ends being parallel to each other in one plane and said outlet ends being parallel to each other in another plane that is generally perpendicular to said one plane of said inlet ends;

said connecting means comprising curved strip plates placed between said curved pipe means and rigidly connected to each of said curved pipe means; and

said connecting means having expansion absorbing means provided along said curved pipe means to absorb thermal expansion without distortion.

4,208,565

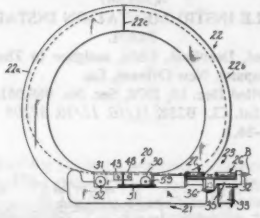
WELDING MACHINE FOR BANDING MATERIAL

George R. Fryer, Ansonia, Conn., assignor to Fryer Corporation, Oxford, Conn.

Filed Dec. 15, 1977, Ser. No. 860,873

Int. Cl.[2] B23K *11/00*

U.S. Cl. 219—78.15 **9 Claims**



1. A banding machine comprising a guideway for guiding banding wire about an object, means for feeding wire to said guideway, first clamping means, means responsive to the leading end of the wire encircling the object for holding the leading edge thereof in said first clamping means, means for reversing said feeding means and tensioning a length of wire about the object, second clamping means engaging the wire after tensioning thereof, means for severing the wire from the source adjacent said second clamping means and moving the ends toward each other, one of said clamping means having a hot welding electrode for contacting the wire adjacent one end of the wire, the other of said clamping means having a ground electrode for contacting the wire adjacent the other end thereof, means responsive to movement of the ends of the wire toward each other for contacting the severed wire behind the hot electrode to provide an electrical path to ground, said path to ground having a higher resistance than the resistance across the free ends during welding thereof.

4,208,566

SPOT WELDING DEVICE

Lars E. Eghammer, Olofström, and Sven-Olof Ohlsson, Svängsta, both of Sweden, assignors to AB Volvo, Gothenburg, Sweden

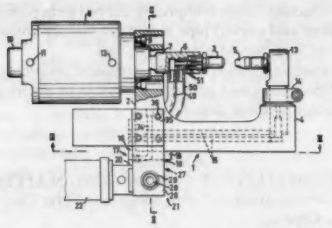
Filed Jul. 18, 1978, Ser. No. 925,685

Int. Cl.[2] B23K *11/10*

U.S. Cl. 219—86.1 **5 Claims**

1. An electric resistance welding device comprising a movable electrode (3) carried by an arm (2) of the device, means (6,8) for moving said electrode (3) with respect to said arm, and a flexible current conductor (39) extending between a fixed current connection member (30) electrically connected with a current source and movable current connection member (41) rigidly connected to the movable electrode (3) for movement therewith, characterized in that the fixed current connection member (30) is rigidly attached to a first side (33) of said arm (2); that the movable current connection member (41) is movably arranged on a second side (37) of said arm; that said second arm side (37) is substantially parallel with a plane passing through said arm (2) and the axis of movement of the

movable electrode; and that the current conductor (39) extends from the movable current connection member (41) in a direc-



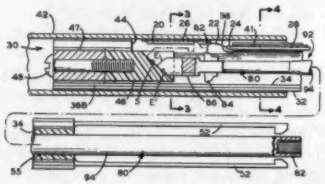
tion parallel with the axis of movement of the movable electrode (3) and is flexible in a plane perpendicular to said plane.

4,208,567

WELDABLE INSTRUMENTATION INSTALLATION TOOL

Stuart E. Reed, Deerfield, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Dec. 11, 1978, Ser. No. 968,061
Int. Cl.[2] B23K *11/10, 11/30, 37/04*
U.S. Cl. 219—86.1 **8 Claims**



1. An installation tool for weldably joining measuring instrumentation to the inner surface of a tube comprising a cylindrical welding section, the section including a plurality of longitudinal grooves formed about the exterior surface of the section, an internal passageway extending throughout the section, a welding slot formed within one of the grooves and disposed near one end of the section, an electrically insulated inclined plane disposed within said passageway and in registry with the slot, an elongated multitipped welding electrode coaxially and slidably disposed within the passageway, a plurality of grasping tangs affixed to the section, and means for mounting the instrumentation to the tool.

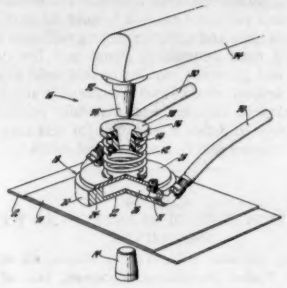
4,208,568

NON-MARRING SPOT WELD TIP

Frank J. Bakewicz, Grosse Pointe Woods; Patrick M. Bouchard, and Patrick W. Pringle, both of Sterling Heights, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 923,632, Jul. 11, 1978, abandoned, which is a continuation of Ser. No. 779,016, Mar. 18, 1977, abandoned. This application Feb. 5, 1979, Ser. No. 9,465
Int. Cl.[2] B23K *11/10*
U.S. Cl. 219—86.31 **5 Claims**

1. In a spot welding gun having a first conventional welding tip with a workpiece contacting surface comparable in area to the area of the weld nugget to be produced in the workpiece and a second welding tip carried by a support arm in opposition to the first welding tip, the second tip comprising; a conductive contactor secured to the support arm for carrying welding current, an electrode having a first surface for selective engagement with the said contactor and an opposed second surface having a workpiece engaging area many times larger than the weld nugget to be produced in the workpiece, a cooling cavity between the first and second surfaces of the electrode, means for circulating cooling water to the cavity whereby heat is extracted from the electrode and the workpiece, coupling means flexibly connecting the electrode to the support arm in a position normally spaced from the contactor and allowing contact between the contactor and electrode in



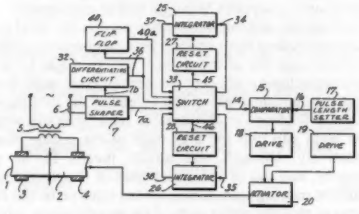
response to welding gun pressure whereby the contactor and electrode are normally biased apart and are movable into contact during a welding interval, and the flexible coupling means allows the second electrode surface to intimately engage the workpiece for efficient thermal and electrical conduction and wide area load distribution.

4,208,569

DEVICE FOR CONTROLLING THE PROCESS OF FLASH-BUTT WELDING

Sergei I. Kuchuk-Yatsenko, ulitsa Filatova 1/22, kv. 47; Valery G. Krivenko, ulitsa Ordzhonikidze, 3, kv. 35; Nikolai V. Podola, ulitsa Pushkinskaya, 8, kv. 12; Vadim P. Krivonos, ulitsa Krasnoarmeiskaya, 45, kv., and Boris L. G. Chev, Novo-Gostomelskoe shosse, 5, kv., all of Kiev, U.S.S.R.

Division of Ser. No. 792,305, Apr. 29, 1977, abandoned, which is a continuation-in-part of Ser. No. 775,930, Mar. 9, 1977, abandoned, which is a continuation of Ser. No. 547,874, Feb. 6, 1975, abandoned. This application Sep. 18, 1978, Ser. No. 943,216
Int. Cl.[2] B23K *11/04*
U.S. Cl. 219—97 **4 Claims**



1. A device for controlling the process of flash-butt welding, comprising: a mechanism for continuously displacing the workpieces to be welded, one toward the other, with a controlled actuator; a mechanism for effecting additional reciprocating motion of the workpieces along the direction of the continuous motion, resulting in intermittent contact between the workpieces; a welding transformer for applying a voltage to the workpieces; means for controlling the speed of said actuator, including a current transformer fitted into the primary circuit of said welding transformer; a pulse-signal shaper coupled to the output of said current transformer and arranged to deliver pulses resulting from the intermittent workpiece

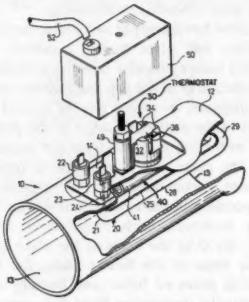
contact, and the duration of which pulses is proportional to the pulses in the circuit of said current transformer said shaper having an output that delivers time-pulse signals; a converter fitted to the output of said pulse shaper for converting the time-pulse signals into amplitude-pulse signals at the output of said converter the amplitude of which is proportional to the duration of the output pulse of the pulse shaper; a welding-current pulse-duration setting means; and a comparator connected to said setting means and to said output of the converter; wherein the output of said comparator is fed to said actuator in said displacing mechanism in order to adjust the speed of the displacement in function of a misalignment signal delivered by said comparator, so that, when the welding-current pulse-duration changes, as compared with a preset value, the speed of the displacement is correspondingly changed.

4,208,570

THERMOSTATICALLY CONTROLLED ELECTRIC ENGINE COOLANT HEATER

Richard H. J. Rynard, Toronto, Canada, assignor to Canadian General Electric Company Limited, Toronto, Canada

Filed Sep. 5, 1978, Ser. No. 939,668
Claims priority, application Canada, Sep. 15, 1977, 286863
Int. Cl.[2] F02N *17/04*; F24H *1/10*; H05B *1/02, 3/82*
U.S. Cl. 219—208 **8 Claims**



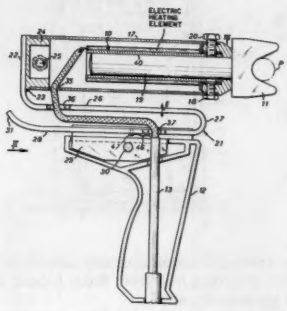
1. In an automotive heater including a jacket having a cylindrical portion with an inlet at one end and an outlet at the other end thereof to define a fluid flow path therethrough, a metal sheathed electrical resistance heating element, said heating element being supported from said jacket with terminal portions on the exterior side thereof and heat generating leg portions on the interior side thereof and spaced therefrom, said leg portions being in the fluid flow path and generally aligned with the longitudinal axis of said cylindrical portion, the improvement which comprises providing in series electrical connection with said heating element a thermal switching means in heat transfer relationship with a predetermined area on the outer surface of said jacket, and providing a thermal bridge separate from said metal sheath linking said heat generating leg portions of said heating element and the interior surface of said jacket in said predetermined area, said thermal bridge comprising a pair of elongated arms, said arms being parallel to each other and aligned with the longitudinal axis of said cylindrical portion and said heating element legs so as to be parallel to the direction of fluid flow, and being in contact with said heating element legs and with the interior of said jacket in said predetermined area.

4,208,571

HEAT SHIELDED HANDLE FOR AN ELECTRICALLY HEATED HAND TOOL

Francis Moumaneix, Le Raincy, and Cesar Marietta, Saint leu la Foret, both of France, assignors to Anciens Etablissements Leon Guilbert & Fils, Paris, France

Filed Nov. 29, 1977, Ser. No. 855,704
Claims priority, application France, Dec. 14, 1976, 76 37595
Int. Cl.[2] H05B *1/00*; B23K *3/04*
U.S. Cl. 219—227 **13 Claims**



1. A hand tool for heating a workpiece comprising an elongate electric heating element, a heat applying member conductively connected to one end of the heating element and in alignment with the longitudinal axis thereof, an elongate cover member extending in spaced relation around and generally parallel to the heating element, means for securing said heating element and said heat applying member to one end of said cover member with said heat applying member extending outwardly of said cover member, said securing means defining the sole heat conductive connection therebetween, a handle disposed generally at right angles to the cover member, a relatively wide, bent bracket member connected to said handle and connected in heat conductive contact with said cover member solely at the opposite end of said cover member, said cover member being adapted to dissipate heat along its length from said one end to said opposite end, said bracket member being arranged to form a shield between said cover member and handle, whereby said cover member and said bracket member shield said handle from heat generated by said heating means when said hand tool is in operation, said bracket member comprising spaced, parallel elongated first and second portions, each substantially coextensive with said cover member, said first and second portions having a width at least as great as the width of said cover member and being joined together at one end in a hairpin configuration, said first portion lying in lateral spaced relation beneath and parallel to said cover member and having its other end secured to said cover member at said opposite end of the cover member, said handle being secured to the other end of said second portion, said handle extending substantially at right angles to said second portion.

4,208,572

OVEN

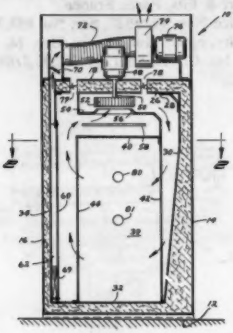
Hans L. Melgaard, Minneapolis, Minn., assignor to Despatch Industries, Inc., Minneapolis, Minn.

Filed May 20, 1977, Ser. No. 799,105
Int. Cl.[2] H05B *9/06, 1/02*
U.S. Cl. 219—400 **11 Claims**

1. An oven for the burn in of integrated circuits comprising:
(a) An oven unit including:
(i) A first vessel having walls defining a cavity therein, said walls having pneumatic openings therethrough to provide a pneumatic inlet and outlet to said cavity; and

(ii) A second vessel disposed about said first vessel such that a closed pneumatic passageway is formed from said outlet to said inlet;

(b) Heating means for heating fluids located in said pneumatic passageway;



(c) Heat exchanger means operably connected to said oven unit for absorbing heat from fluids located in said pneumatic passageway; and

(d) Control means responsive to the temperature in said oven unit and operably affixed to said heat exchanger means for controlling the rate of heat absorption by said heat exchanger means.

4,208,573

KILN UTILIZING INFRARED RADIATION IN THE RANGE OF 0.7 TO 1.5 μM TO HEAT DENTAL CERAMIC MATERIAL

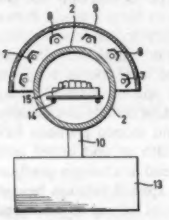
Bernd Risse, Säckingen, Fed. Rep. of Germany, assignor to Vita Zahnfabrik H. Rauter KG, Säckingen, Fed. Rep. of Germany

Filed Nov. 9, 1977, Ser. No. 850,283

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1976, 2656288

Int. Cl.[2] F27B *5/04*

U.S. Cl. 219—411 **10 Claims**



1. A kiln for dental ceramic work comprising:

(a) a heating retort means having a retort chamber housing sufficient to contain dental ceramic work to be heated to the burning temperature of the ceramic material,

(b) said retort chamber housing being composed of a high heat resistant and infrared radiation permeable material and having a curved section on the upper portions thereof,

(c) the retort means including a table composed of high heat resistant and radiation permeable material and being disposed within said housing for supporting the dental ceramic material,

(d) a plurality of infrared radiators which generate short wave infrared radiation of wavelengths in the range of 0.7 to 1.5 μm effective to penetrate the housing and to heat the dental ceramic material to said burning temperature,

(e) said infrared radiators being distributed externally solely around the upper portion of the chamber approximately from the level of said table along the curved section of the housing, and

(f) a reflector means is disposed adjacent each infrared radiator to aid in focusing said infrared radiation onto said dental ceramic material.

4,208,574

TEMPERATURE CONTROLLABLE HEATER PLATE FOR MOLDS

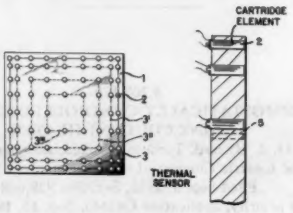
Manfred Schäfer, Hemmingen, Fed. Rep. of Germany, assignor to Werner & Pfleiderer, Stuttgart, Fed. Rep. of Germany

Filed Mar. 10, 1978, Ser. No. 885,206

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1977, 2711558

Int. Cl.[2] H05B *3/72*

U.S. Cl. 219—539 **6 Claims**



1. A heater plate assembly for a plunger-type molding press, said heater plate assembly comprising:

a heater plate having upper and lower surfaces and a peripheral edge, said plate having a center, said plate being provided with a plurality of holes extending into the plate perpendicularly to the top and bottom surfaces, said holes being disposed in a plurality of spaced rows extending parallel to the peripheral edge of the plate and of successively increasing distance from the center of the plate to divide the plate into a plurality of regions constituting congruent partial areas of the surfaces of the plate, a corresponding plurality of selectively electrically heatable heating members, each disposed in one of said holes thereby dividing the body of the plate into a plurality of heatable areas of the heater plate, the spacing between successive rows of holes and heating members therein progressively decreasing from the center of said heater plate toward the peripheral edge of said heater plate, thereby increasing the density of the heating members from the center of the plate towards the peripheral edge, and control means for individually controlling the heating of the heating members and thus of the temperatures in said heatable areas.

4,208,575

CREDIT CARD OR CHECK VALIDATOR

Garry P. Haltof, Rochester, N.Y., assignor to Valmet Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 854,121, Nov. 23, 1977, abandoned. This application Jan. 22, 1979, Ser. No. 5,226

Int. Cl.[2] G06K *5/00*; H04Q *3/00*

U.S. Cl. 235—380 **39 Claims**

1. A credit card or check validator comprising:

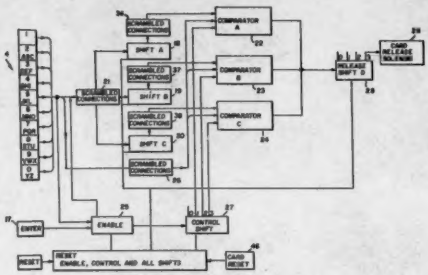
a. a keyboard;

b. a scrambler circuit responsive to entry via said keyboard of data derived from indicia on said card or check;

c. a comparator circuit responsive to entry via said keyboard of code data derived from the user of said card or check;

d. manually operable means for shifting an output of said keyboard from said scrambler circuit to said comparator

circuit at the end of said entry of said data derived from said card or check; and



e. means responsive to actuation of said comparator circuit by input of a correct sequence of said code data for indicating validity of said card or check.

4,208,576

AUTOMATIC READER OF PROCESSING CONDITION DATA FOR ARTICLES TO BE PROCESSED IN AN AUTOMATIC PROCESSING SYSTEM

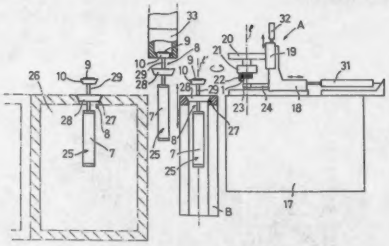
Yoshio Hane, Kawasaki, and Nobuo Chino, Komae, both of Japan, assignors to Taisei Kensetsu Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1978, Ser. No. 954,167

Claims priority, application Japan, Jun. 26, 1978, 53-77197

Int. Cl.[2] G06K *7/02*; G06F *15/46*; G06M *1/12*

U.S. Cl. 235—452 **2 Claims**



1. A pneumatic apparatus for reading punch cards containing processing condition data for articles being processed in an automatic system, said apparatus comprising:

a pneumatic reading head for reading said punch cards, said reading head being comprised of:

a plurality of air conduits, each conduit having an inlet and an outlet, and said outlets being aligned in one horizontal plane according to the punch out locations on said punch card,

air supply means connected to said inlets of said air conduits for supplying air to said conduits, and

back pressure detecting means in each of said conduits for detecting back pressure in said conduits; and

movable carrier jig means for holding said article to be processed in said system and carrying said article through said system, said carrier jig means having a card fitting portion thereon for holding said punch card thereat, and said carrier jig means being movable toward and away from said outlets of said conduits for positioning said card fitting portion thereof adjacent said outlets;

said air passing through said conduits creating a back pressure in said conduits corresponding to those portions of said punch cards which are solid when said punch card on said carrier jig means is positioned adjacent said conduit outlets, and said back pressure being detectable by said back pressure detecting means, whereby the solid and punched portions of said punch card can be determined.

4,208,577

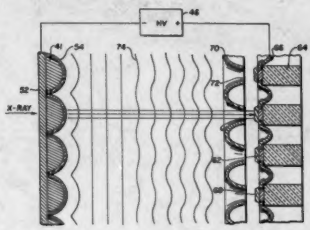
X-RAY TUBE HAVING SCINTILLATOR-PHOTOCATHODE SEGMENTS ALIGNED WITH PHOSPHOR SEGMENTS OF ITS DISPLAY SCREEN

Shih-Ping Wang, Los Altos, Calif., assignor to Diagnostic Information, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 853,440, Nov. 21, 1977, Pat. No. 4,140,900, which is a continuation-in-part of Ser. No. 763,637, Jan. 28, 1977, abandoned. This application Aug. 10, 1978, Ser. No. 932,666

Int. Cl.[2] H01J *31/50*

U.S. Cl. 250—213 VT **22 Claims**



1. A large area, X-ray array amplifier-detector tube comprising:

a tube envelope open at both ends,

an input window at one end of the envelope for receiving input primary X-rays,

a segmented output phosphor display screen at the other end of the envelope,

a segmented scintillator-photocathode screen assembly interposed between the input window and the output display screen, the segmentations of the scintillator-photocathode screen assembly being in registration with the segmentations of the output phosphor display screen, and

means for applying a high electostatic potential between the scintillator-photocathode screen assembly and the output display screen.

4,208,578

OPTICAL INSPECTION APPARATUS

Robert W. McLoughlin, and Colin P. Nuttall, both of Bangor, Northern Ireland, assignors to Gallaher Limited, Belfast, Northern Ireland

Filed Jan. 18, 1978, Ser. No. 870,447

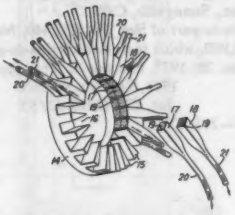
Claims priority, application United Kingdom, Nov. 28, 1977, 49373/77

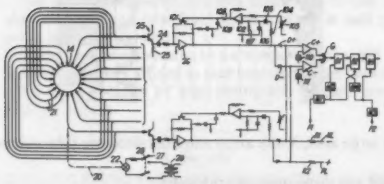
Int. Cl.[2] H01J *39/12*

U.S. Cl. 250—214 AG **9 Claims**

1. In an optical inspection apparatus for monitoring a continuously moving rod, said apparatus comprising a circular head through which said rod passes, a first set of fibre optic conductors the ends of which terminate at an inner peripheral surface of said head and which transmits light from a source to said head to illuminate said rod passing therethrough, and a second set of fibre optic conductors the ends of which also terminate at said peripheral surface of the head to pick up light reflected from said rod passing through said head and transmit said reflected light to photoelectric elements, wherein said second set of conductors are divided into angularly spaced groups around said head and selected groups lead to separate ones of said photoelectric elements, the improvement wherein the outputs of said photoelectric elements are fed via A.C. cou-

pling means into separate channels, the D.C. components of said outputs being removed so that the electric signal in each of said channels is a fluctuating noise signal corresponding to fluctuations in the reflectivity of the part of said rod viewed by the respective group of said second set of conductors, said channels being connected to comparator means which is responsive to said noise signal levels in individual ones of said channels and which produces a fault signal if said signal level





in any one channel is greater than a preset allowable level, each of said channels including an amplifier for amplifying the output from the respective one of said photoelectric elements, and wherein each of said channels includes means for feeding back to said amplifier a signal related to the mean level of said amplified signal in said channel and for controlling the gain of said amplifier so that the mean level of said amplified noise signal is maintained substantially constant.

4,208,579

ELECTRICALLY ISOLATED CONTROL MEANS FOR THE ILLUMINATING SOURCE OF A DENTAL DRILL

Leonard Scrivo, Tuckahoe, N.Y.; Paul Binner, Dumont, N.J., and Louis Weinstein, Yardley, Pa., assignors to Vicon Products Corp., Pelham Manor, N.Y.

Continuation-in-part of Ser. No. 874,911, Feb. 2, 1978, abandoned. This application Dec. 22, 1978, Ser. No. 972,272

Int. Cl.[2] G02B *27/00*

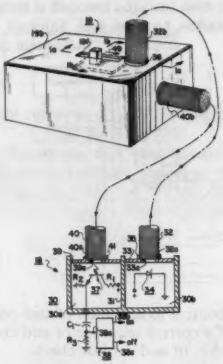
U.S. Cl. 250—227 **44 Claims**

1. Control means for a fiber optic illumination system having a light source and a fiber optics bundle whose proximal end is positioned adjacent to said light source and whose distal end is positionable in the immediate region where an examination procedure is being performed to provide increased acuity in the region to be illuminated, said control means comprising a control unit small enough not to interfere with the normal use of other implements being employed in the work area;

signal generating means contained within said portable control unit including manually operable switch means for activating said signal generating means to create a function control signal;

sensing means for generating an activating signal upon receipt of said function control signal;

means connected to said sensing means for assuming at least first ans second states, said means for assuming responsive to a receipt of said activating signal to assume a predetermined one of said at least first and second states and retain such state until a subsequently generated activating signal is received; and



means responsiveto said predetermined one state for applying energizing potential to said light source.

4,208,580

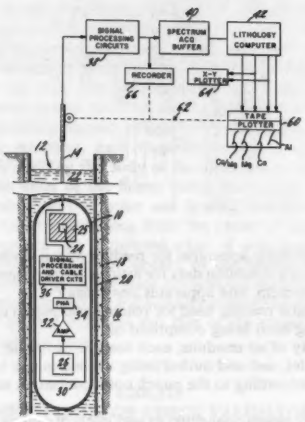
LITHOLOGY DETERMINATION FROM THE CALCIUM AND MAGNESIUM ACTIVATION LINES

Jeffrey S. Schweitzer, Ridgefield, Conn., and Ralph M. Taphorn, Boulder, Colo., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,244

Int. Cl.[2] G01V *5/00*

U.S. Cl. 250—262 **17 Claims**



1. A method for investigating the lithology of an earth formation traversed by a well bore, comprising the steps of:

(a) irradiating an earth formation with neutrons of sufficient energy to produce therein the neutron activation reactions $^{26}Mg(n,\gamma)\ ^{27}Mg$ and $^{48}Ca(n,\gamma)\ ^{49}Ca$;

(b) measuring the level of gamma ray activity resulting from the decay of ^{27}Mg using a high resolution gamma ray detector;

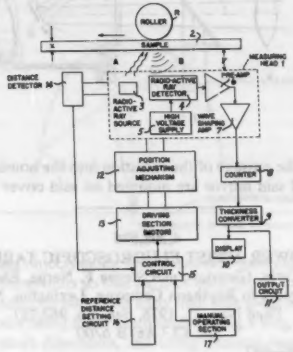
(c) measuring the level of gamma ray activity resulting from the decay of ^{49}Ca using a high resolution gamma ray detector; and

(d) combining said ^{27}Mg gamma ray measurement and said ^{49}Ca gamma ray measurement to provide an indication of the lithology of the earth formation.

4,208,581
RADIOACTIVE RAY GAUGE

Masao Kaneko, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Nov. 9, 1977, Ser. No. 849,900
Claims priority, application Japan, Nov. 9, 1976, 51/134474
Int. Cl.[2] G01T 1/16; H01J 39/00
U.S. Cl. 250—277 R 2 Claims



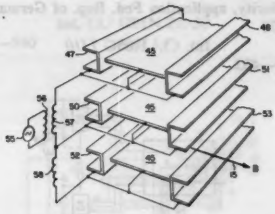
1. A radioactive ray gauge comprising: a measuring head disposed during use of the gauge in spaced-apart relationship from an advancing object which has at least a surface portion thereof coated with material and operable to emit primary radioactive rays directed toward the advancing object and to detect the intensity of secondary radioactive rays emitted by the coated material on the advancing object; a distance detector fixed to said measuring head for movement therewith and spaced apart from the advancing object for continuously detecting the distance between said measuring head and the surface of the advancing object and providing a corresponding output signal; a position adjusting mechanism operable when driven for selectively moving the combination of said measuring head and said distance detector toward and away from the advancing object; a driving motor connected to drive said position adjusting mechanism; and means including a control circuit for controlling the operation of said driving motor according to the output signal of said distance detector so as to maintain constant the distance between said measuring head and the surface of the advancing object.

4,208,582
ISOTOPE SEPARATION APPARATUS

Donald Arnush, Rancho Palos Verdes; Kenneth R. MacKenzie, Pacific Palisades, and Ralph F. Wuerker, Palos Verdes Estates, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Dec. 5, 1977, Ser. No. 858,329
Int. Cl.[2] B01D 59/44; H01J 39/34
U.S. Cl. 250—291 19 Claims

1. In an isotope separation apparatus:
(a) an elongated evacuated container;
(b) means for generating a magnetic field extending substantially parallel to the longitudinal axis through said container;
(c) means including an electrical field extending along said longitudinal axis for generating and accelerating electrons longitudinally of said container;
(d) a plurality of substantially identical cells disposed respectively at longitudinally-spaced positions within said container;
(e) each of said cells including a plurality of collector surfaces extending parallel to each other and parallel to said axis;
(f) means for feeding a gas to be separated into each of said cells so that said gas becomes ionized by the electrons passing along said longitudinal axis to form a substantially neutral plasma having a density of at least 1×10^8 particles per cubic centimeter throughout substantially the entire space encompassed by said magnetic field; and

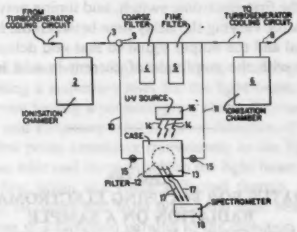


(g) means applying an alternating electric field for exciting the ions of a desired isotope at their resonant cyclotron frequency or a harmonic thereof, whereby the energized desired ions are preferentially collected by said collector surfaces.

4,208,583
DETECTION OF ANALYSIS OF PARTICULATE MATERIAL IN FLUID STREAMS

Dennis M. Ryder, Northumberland, England, assignor to Reyrolle Parsons Limited, England

Filed May 19, 1978, Ser. No. 907,767
Claims priority, application United Kingdom, May 19, 1977, 21095/77
Int. Cl.[2] G09K 3/00; G01J 1/42
U.S. Cl. 250—302 1 Claim



1. An apparatus for the detection analysis of particulate material carried in a fluid cooling stream of a dynamo-electric machine, comprising:
an at least partially transparent sampling means through which the fluid cooling stream may be passed;
said sampling means incorporating removable filter means for arresting an accumulation of particles restrained from flow in the fluid stream;
means for directing ultra-violet radiation onto said removable filter means at a location where the accumulation of particles results; and
spectrometer means whereby optical radiation analysis may be performed on radiation emitted by the accumulation of particles cconsequent upon their excitation by the ultra-violet radiation means.

4,208,584

CIRCUIT ARRANGEMENT FOR AN X-RAY GENERATOR

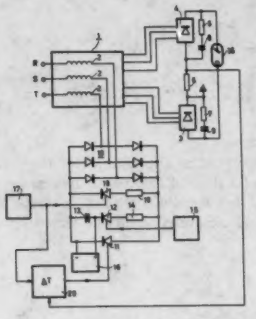
Gerd Vogler, and Heinz Mester, both of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 2, 1978, Ser. No. 874,527

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1977, 2719373

Int. Cl.[2] H05G 1/10

U.S. Cl. 250—402 7 Claims



1. In an X-ray generator having an X-ray tube, a circuit comprising, a high voltage transformer having a primary winding circuit for coupling to an AC power supply and a secondary winding circuit for energizing the X-ray tube via a high voltage circuit, a first electronic switch connected in the transformer primary winding circuit so as to switch the voltage to the X-ray tube on and off, a second electronic switch and a resistor connected in a series circuit, means connecting said series circuit in parallel with the first electronic switch, means for supplying a start signal for the high voltage to the second switch so as to activate said second switch at the start of an X-ray exposure period, a timing network having an input coupled to receive the high-voltage start signal for starting the timing network and an output for supplying an output signal to activate the first electronic switch, said timing network including means for varying the delay time between the high-voltage start signal and the output signal so that said delay time varies inversely with the amplitude of current in said high voltage circuit.

4,208,585

APPARATUS FOR FOCUSING ELECTROMAGNETIC RADIATION ON A SAMPLE

Henning Vogt, Cologne, Fed. Rep. of Germany, assignor to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

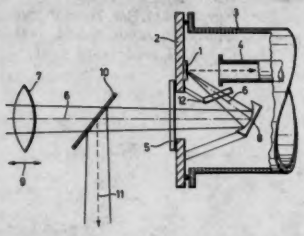
Filed Sep. 6, 1978, Ser. No. 940,138

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1977, 2740183

Int. Cl.[2] H01J 39/48; G02B 7/18

U.S. Cl. 250—423 P 4 Claims

1. In apparatus for directing a beam of electromagnetic radiation onto a sample by focusing and deflecting the radiation, the improvement comprising: a spherical mirror disposed for focusing and deflecting the radiation onto the sample; an axially displaceable lens with a long focal length disposed ahead of said sphereical mirror in the beam path; and a vacuum-tight housing for accommodating the sample and a window in a wall of said housing for the passage of the radiation, with said spherical mirror being disposed inside said housing and said lens being disposed outside said housing, and wherein said housing is provided with a cover flange hermetically sealing said housing, said window is carried by said cover



flange for the passage of the radiation into the housing, and the sample and said mirror are mounted on said cover flange.

4,208,586

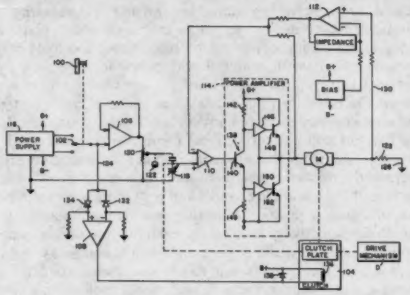
POWER ASSIST FLUOROSCOPIC TABLE

James R. Craig, Glenview, and Steven F. Nerge, Elgin, both of Ill., assignors to Raytheon Company, Lexington, Mass.

Filed Nov. 21, 1978, Ser. No. 962,727

Int. Cl.[2] A61B 6/00

U.S. Cl. 250—447 10 Claims



1. A fluoroscopic table comprising a base, a patient-supporting top on the base, a radiation source assembly within the base for generating a beam of X-rays, a receptor assembly spaced from the base in position to receive said X-ray beam, electrical power means for moving said source and receptor assemblies simultaneously longitudinally of the table, said power means comprising a motor, and an electrical power circuit which provides controlled current flow to the motor for producing a constant output torque at the motor of a value nearly that which will move said assemblies, and means for applying manual force to the assemblies to supplement said power means.

4,208,587

METHOD AND APPARATUS FOR ULTRAVIOLET CURING OF THREE DIMENSIONAL OBJECTS WITHOUT ROTATION

Bernard J. Eastlund, Olney; Charles H. Wood, Rockville; Robert W. Couch, Wheaton, and Michael G. Ury, Bethesda, all of Md., assignors to Fusion Systems Corp., Rockville, Md.

Filed Aug. 31, 1976, Ser. No. 719,209

Int. Cl.[2] A61K 27/02

U.S. Cl. 250—492 R 34 Claims

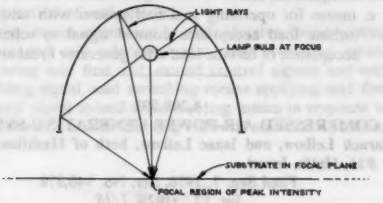
1. A method of curing three dimensional cylindrical objects with a plurality of ultraviolet lamp units without rotating the objects, comprising the steps of;

providing at least a pair of focussed ultraviolet lamp units,

each of which focusses the light emitted therefrom at a focal plane,

defining a translation path for said three dimensional objects, said focal planes of said lamp units being parallel to each other and parallel to said translation path,

locating one of said lamp units on one side of said translation path generally facing said path, and the other of said lamp units on the other side of said path generally facing said path, and



moving said objects along said translation path close enough to said lamp units so that parts of each object are substantially closer to said lamp units than said focal planes, said lamp units being linear lamp units having a long dimension and a short dimension, and being situated opposite each other across said translation path with the long dimension of each lamp unit being at an angle of at least 78° with the cylindrical axis of said moving said cylindrical objects.

4,208,588

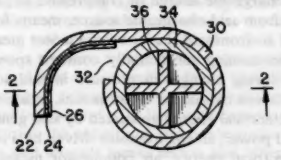
HAND-HELD SHIELDING DEVICE FOR RADIOACTIVE MATERIAL

Stephen Rudin, Williamsville, N.Y., assignor to Victoreen, Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 617,022, Sep. 26, 1975, abandoned. This application Oct. 14, 1977, Ser. No. 842,131

Int. Cl.² G21F *5/00*; A61N *5/00*

U.S. Cl. 250—496 **13 Claims**



1. A hand-held shielding device for viewing a container of radioactive material therein, comprising a unitary envelope formed from a single sheet of a high density radiation shielding material having a holding portion shaped to surround and conform to a container, said holding portion formed with a longitudinally extending aperture extending for at least a portion of the length of said holding portion and a shielding portion extending from one side of said aperture and extending away from and at least overlapping the line of sight through said aperture, and an arcuate reflective surface on the inside surface of said shielding portion in the line of sight of said aperture and extending into said aperture of said holding portion for viewing a non-inverted image of indicia on said container whereby a user is not subject to direct radiation from said aperture.

4,208,589

OPTICAL SCANNER

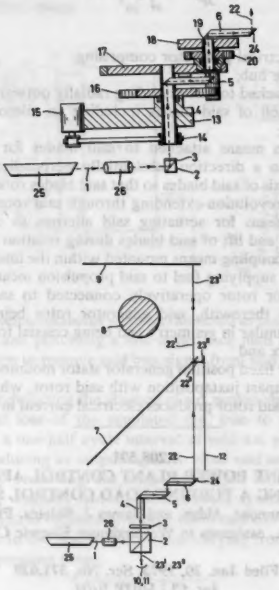
Nigel J. R. Dashwood, Royston, and Dexter R. Plummer, Ongar, both of England, assignors to Schumag GmbH, Aachen, Fed. Rep. of Germany

Filed Jan. 24, 1978, Ser. No. 871,858

Claims priority, application United Kingdom, Jan. 25, 1977, 2904/77

Int. Cl.² G01N *21/30*

U.S. Cl. 250—560 **21 Claims**

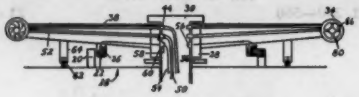


1. Optical scanner with a light beam reciprocated parallel to itself comprising a stationary inlet for the light beam, an elongated first prism having a parallelogram shape disposed downstream from said stationary inlet in travel direction of the light beam, said first prism extending transversely to the light beam and having an inlet end through which the light beam is admitted to said first prism and twice reflected therein, said first prism having an outlet end from which the light beam leaves said first prism in a direction parallel to the direction in which it is admitted through said inlet end to said first prism, a second prism similar to said first prism having an inlet end disposed downstream of said outlet end of said first prism in travel direction of the light beam, said second prism having an outlet end determining a respective location for the light beam leaving the scanner during a scanning operation, a first rotating carrier for said first prism having a mathematical rotary axis extending in the same direction as that of the light beam being admitted to said first prism through said inlet end of said first prism, and a second carrier rotating at the same rotary speed as said first carrier and counter thereto, said second carrier having a mathematical rotary axis extending in the same direction as that of the light beam leaving said first prism through said outlet end of said first prism and rotating together with said outlet end of said first prism about said rotary axis of said first rotating carrier.

4,208,590
JET ELECTRIC GENERATOR

Cecil R. Blomquist, 3014 N. 34th St., Tacoma, Wash. 98407, and Rodney L. O'Hiser, P.O. Box 807, Portland, Oreg. 97207

Continuation-in-part of Ser. No. 866,569, Jan. 6, 1978, abandoned. This application Sep. 14, 1978, Ser. No. 942,316
Int. Cl.[2] H02P 9/04; F02C 3/14
U.S. Cl. 290—1 R 12 Claims

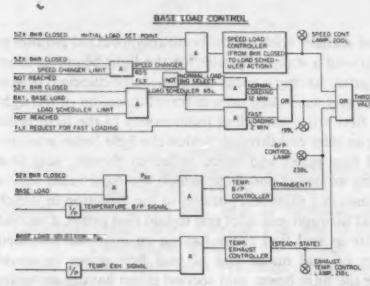


1. An electrical generator comprising:
a rotatable hub;
blades attached to and extending radially outward from said hub, each of said blades including an aileron mounted thereto;
propulsion means attached to said blades for producing thrust in a direction substantially perpendicular to the radial axis of said blades so that said blades rotate about an axis of revolution extending through said rotatable hub;
control means for actuating said ailerons to control the attitude and lift of said blades during rotation thereof;
rotatable coupling means mounted within the interior of said hub for supplying fuel to said propulsion means;
a generator rotor operatively connected to said hub for rotation therewith, said generator rotor being substantially annular in geometry and being coaxial to said rotatable hub; and
an annular fixed position generator stator mounted in coaxial spaced apart juxtaposition with said rotor, whereby rotation of said rotor produces electrical current in said stator.

4,208,591
GAS TURBINE POWER PLANT CONTROL APPARATUS INCLUDING A TURBINE LOAD CONTROL SYSTEM

Robert A. Yannone, Aldan, and James J. Shields, Philadelphia, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 20, 1973, Ser. No. 371,629
Int. Cl.[2] H02P 9/04
U.S. Cl. 290—40 R 20 Claims

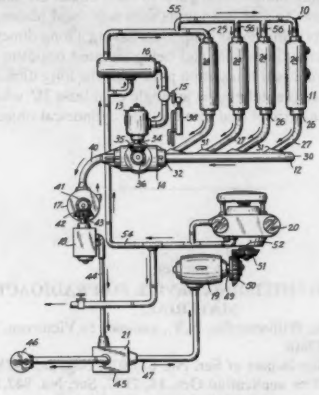


1. A gas turbine electric power plant including a gas turbine having compressor, combustion and turbine elements, a generator coupled to the gas turbine for drive power, a generator breaker for coupling said generator to a power system so as to deliver power to the power system, a fuel system for supplying fuel to said gas turbine combustion element, and a turbine load control system for controlling the load accepted by said turbine, said turbine load control system comprising:
a. a first control path for generating a first control signal adaptable to control the acceptance of turbine load according to a first predetermined schedule;
b. a second control path for generating a second control signal adaptable to control the acceptance of turbine load according to a second schedule, and having means for selectively initiating generation of said second control signal in accordance with operator choice;
c. said second control path including means for selecting the rate of change of said generated second control signal from a plurality of rates;
d. means for comparing said control signals in accordance with a predetermined arrangement, and for providing a turbine load acceptance control signal derived from said comparison; and
e. means for operating said fuel system with said derived turbine load acceptance control signal to schedule the acceptance of turbine load after generator breaker closing.

4,208,592
COMPRESSED AIR POWER GENERATING SYSTEM

Baruch Leibow, and Isaac Leibow, both of Hashilowach St., #16, Haifa, Israel

Filed Sep. 7, 1978, Ser. No. 940,378
Int. Cl.[2] H02K 7/18
U.S. Cl. 290—52 3 Claims



1. An improved compressed air generating system comprising: a chargeable source of compressed air, air motor means driven from said chargeable source, means for regulating the flow of air from said source to said motor means for automatically maintaining substantially constant speed of said motor means during changes in pressure in said source, generator means driven by said air motor means, means for utilizing part of the electrical energy generated by said generator means for external power, an electromotor driven by a remaining part of said electrical energy, air compressor means driven by said electromotor, and means conducting the output of said air compressor means to said chargeable source.

4,208,593
METHOD AND SYSTEM OF SELECTIVE DISCONNECTION OF LOADS FROM A POWER SOURCE

Matthew D. Sullivan, Stone Mountain, Ga., assignor to U.S. Energy Conservation Systems, Inc., Atlanta, Ga.

Filed Feb. 13, 1978, Ser. No. 877,317
Int. Cl.[2] H02J 9/06
U.S. Cl. 307—35 6 Claims

1. A system for controlling the disconnection of a load from a source of power as a function of a predetermined condition relating to power usage and as a function of time, the system comprising:

means connected to the load for selectively disconnecting the load from the source of power in response to a control signal assuming a disconnecting value;

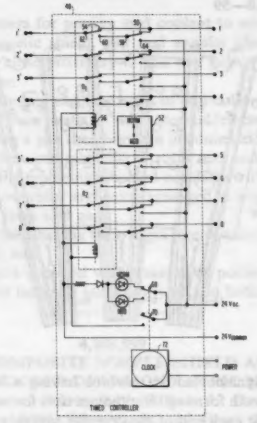
a source of a first control signal that selectively assumes said disconnecting value in response to the predetermined condition;

a source of a second control signal that is fixed at said disconnecting value;

timing means for generating an enabling signal indicating a predetermined time period;

selector means for selecting between first and second modes of operation of said system;

switching means connected to said selective disconnecting means and said selector means, said switching means receiving said first and second control signals and said enabling signal, said switching means applying said first control signal to said disconnecting means in response to said selector means selecting either of said first or second



modes of operation and said enabling signal indicating a time outside said predetermined time period, said switching means applying said first control signal to said disconnecting means in response to said selector means selecting a predetermined one of said first and second modes of operation and said enabling signal indicating a time within or outside said predetermined time period, said switching means applying said second control signal to said disconnecting means in response to said selector means selecting the other of said first and second modes of operation and said enabling signal indicating a time within said predetermined time period, whereby the load is disconnected from the source during the entirety of said predetermined time period when said selector means selects said other of the modes and is selectively disconnected in response to said predetermined condition at all times outside said time period as well as at times during said time period when the selector means selects said one of the modes.

4,208,594

POWER MONITOR FOR USE IN STARTING AND STOPPING A DIGITAL ELECTRONIC SYSTEM

Eugene H. Guicheteau, Audubon, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

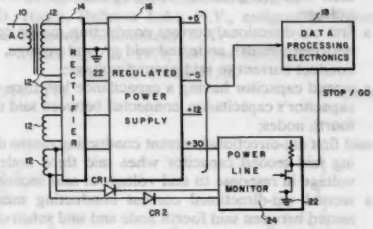
Filed Apr. 3, 1978, Ser. No. 892,833
Int. Cl.[2] H03K *17/16, 17/22, 17/28*
U.S. Cl. 307—200 A **1 Claim**

1. In a digital electronic system operative within a predetermined acceptable regulated range of a d.c. power supply energized from an a.c. source, a power monitor for providing a low impedance path to ground to initialize the digital electronic system at a.c. power turn-on and a.c. power turn-off, comprising in combination:

a first semiconductor switch coupled between the digital electronic system and ground, said semiconductor switch being in a closed position in the absence of a bias signal;

a bias signal source derived from said regulated d.c. power supply;

means for coupling said bias signal to open said first semiconductor switch, said bias signal coupling means including a resistive-capacitive network introducing a delay between the time the regulated d.c. potential reaches a value sufficient to provide said bias signal and the time said switch opens;



a second semiconductor switch connected to said a.c. power source and providing a low impedance path in its closed condition to remove said bias signal from said first switch; and

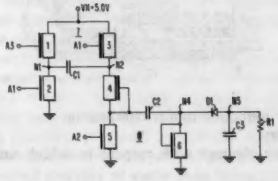
means for detecting the absence of a.c. power and the consequential loss of the regulated d.c. bias to said system within a one-half cycle interval of said a.c. power signal for producing an output signal to close said second switch thereby removing the said bias signal from said first switch; whereby said digital electronic system is coupled to ground in response to a turn-off of said a.c. power prior in time to the regulated d.c. bias varying from its acceptable operating range.

4,208,595

SUBSTRATE GENERATOR

Leo A. Gladstein, Tucson, Ariz.; Robert D. Love, Kingston, N.Y., and Larry C. Martin, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 24, 1978, Ser. No. 954,946
Int. Cl.[2] H03K *1/02*
U.S. Cl. 307—297 **12 Claims**



1. In an integrated circuit on a semiconductor substrate, a substrate voltage generator connected between a power supply voltage and the ground voltage, comprising:

a first impedance device connected between said power supply voltage and a first node;

a first FET device connected between said first node and said ground voltage, having a gate connected to a first periodic voltage pulse;

a second FET device connected between said power supply

voltage and a second node, having a gate connected to said first periodic voltage pulse;

a first capacitor connected between said first and second nodes;

said first and second FET devices and said first capacitor operating in response to said first periodic voltage pulse to produce a high voltage at said second node having a magnitude which is approximately twice the difference between said power supply voltage and said ground voltage;

a second impedance device connected between said second node and a third node;

a third FET device connected between said third node and said ground voltage, having a gate connected to a second periodic voltage pulse which rises to an on-state voltage after said first periodic voltage pulse falls to an off-state voltage;

a first uni-directional current conducting means connected between a fourth node and said ground voltage, poled to conduct current to said ground voltage;

a second capacitor having a capacitance less than said first capacitor's capacitance, connected between said third and fourth nodes;

said first uni-directional current conducting means discharging said second capacitor when said third node rises in voltage in response to said voltage at said second node;

a second uni-directional current conducting means connected between said fourth node and said substrate, poled to conduct current out of said substrate;

said second uni-directional current conducting means conducting current from said substrate in response to a reduction in voltage at said fourth node in response to said second periodic voltage pulse turning on said third FET device;

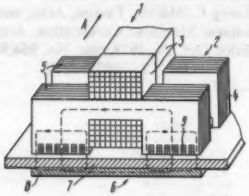
whereby a negative substrate voltage is produced having an absolute value greater in magnitude than is the magnitude of said power supply voltage.

4,208,596

LINEAR INDUCTION MOTOR

Alexandr D. Popov, pereulok Rynochny, 44, and Vladimir A. Solomin, ulitsa Dachnaya, 14, kv. 31, both of Rostov-na-Donu, U.S.S.R.

Filed Oct. 18, 1978, Ser. No. 952,598
Int. Cl.² H02K *41/02*
U.S. Cl. 310—13 **1 Claim**



1. A linear induction motor comprising:

an inductor;

a secondary element with respect to which said inductor moves;

a magnetically conductive base of said secondary element;

an electrically conductive part of said secondary element arranged on said magnetically conductive base;

transversal laminations of said inductor having rods and a yoke coupling said rods, the first lateral rods and the second lateral rods having suitable end faces;

a first polyphase concentrated winding surrounding each said transversal lamination;

first slots provided in said end faces of the first lateral rods of the laminations on the side of the secondary element;

second slots provided in the end faces of the second lateral rods of the laminations on the side of said secondary element;

a second polyphase winding eclosed within the first slots and producing a magnetizing force which sets up a magnetic field travelling transversely of said inductor movement;

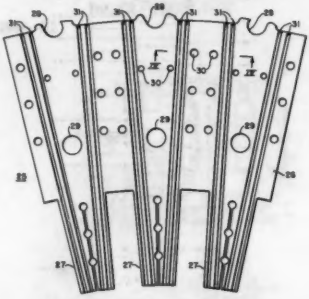
a third polyphase winding enclosed within the second slots and producing a magnetizing force which sets up a magnetic field travelling in the opposite sense to the magnetic field set up by the second polyphase winding.

4,208,597

STATOR CORE COOLING FOR DYNAMOELECTRIC MACHINES

Arthur Mulach, Penn Hills, and Warren W. Jones, Bullskin Township, Westmoreland County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 22, 1978, Ser. No. 917,836
Int. Cl.² H02K *9/00*
U.S. Cl. 310—59 **5 Claims**



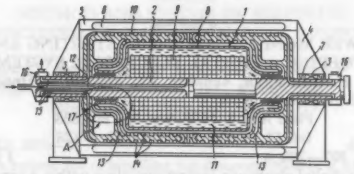
1. In a dynamoelectric machine having a laminated stator core with teeth forming longitudinal slots for windings, clamping means at each end of the core for applying clamping pressure thereto, said clamping means including a finger plate, and a vent plate disposed between the finger plate and the core laminations, said vent plate being a rigid, non-magnetic plate of substantially the same configuration as the core laminations, and having radial grooves in at least one surface thereof for flow of coolant gas.

4,208,598

ELECTRICAL MACHINE WITH CRYOGENIC COOLING

Jury S. Popov, ulitsa Bariernaya, 16, kv. 14; Gennady S. Gorbunov, ulitsa Polzunova, 35, kv. 42, both of Novosibirsk; Jury V. Skachkov, Nevsky prospekt, 125, kv. 13, Leningrad, and Jury I. Badrukhin, ulitsa Polzunova, 4, kv. 6, Novosibirsk, all of U.S.S.R.

Filed May 10, 1978, Ser. No. 904,400
Int. Cl.² H02K *5/18*
U.S. Cl. 310—64 **6 Claims**



1. An electrical machine with cryogenic cooling, comprising:

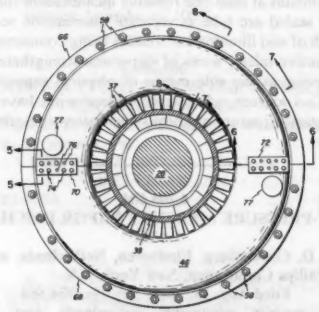
an outer casing;
a stator winding disposed within and on the inner surface of said outer casing;
a hollow rotor rotatably disposed within said outer casing which is provided with end face walls at opposite ends thereof;
a shaft supporting said hollow rotor;
a superconducting field winding disposed within said hollow rotor and rigidly fixed to said shaft;
a space between said outer casing supporting said stator winding and said hollow rotor, and said space adapted to be evacuated and maintained under a vacuum;
a thermal/electromagnetic shield disposed within said space and provided with end face walls and supported by said shaft;
a coolant adapted to be fed into said hollow rotor and to said thermal/electromagnetic shield;
a plurality of ducts for the circulation of said coolant, provided in said thermal/electromagnetic shield to cool said shield;
annular chambers for passing said coolant to said thermal-/electromagnetic shield, and said annular chambers are disposed in close proximity to said end face walls of said hollow rotor;
neck portions in said end face walls of said hollow rotor and in said end face walls of said thermal/electromagnetic shield, having a gap therebetween in communication with said space between said hollow rotor and said shaft, and said neck portions being disposed coaxially with said shaft of said hollow rotor and being arranged in a spaced relationship to form said gap;
said neck portions having their edges interconnected so as to form a seal; and
heat exchangers disposed within said neck portions for preventing heat influx to said cavitiy of said hollow rotor.

4,208,599

INTEGRAL COMPOSITE NOZZLE-SHIELD ASSEMBLY FOR A GAS-COOLED DYNAMOELECTRIC MACHINE

Anthony F. Armor, Schenectady; William L. Darby, Scotia; James B. Archibald, Schenectady, and Frank R. Landrio, Delanson, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 7, 1978, Ser. No. 913,486
Int. Cl.[2] H02K *5/18*
U.S. Cl. 310—64 **6 Claims**



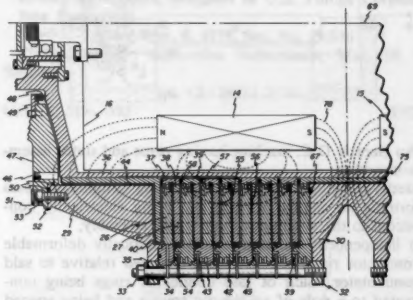
1. In combination with a dynamoelectric machine having a stator including a stator core, a rotor disposed within said core and defining a gas gap with said core, a gas cooler, and a fan having a plurality of blades attached to said rotor for circulating coolant gas through said dynamoelectric machine, the improvement comprising an integral composite nozzle-shield assembly for guiding the flow of coolant gas between said cooler and said fan, said nozzle-shield assembly including:
a pair of 180-degree arcuate sections of non-electrically conductive non-magnetic material;
means for connecting the outer edge portion of each of said sections to said stator;
means for interconnecting said 180-degree arcuate sections along radial joints;
a rub strip within an annular recess in an inner edge portion of each of said arcuate sections and having a serrated surface, said serrated surface adapted to provide, when said arcuate sections are mounted in close proximity to said fan blades, a labyrinth seal to minimize leakage of coolant gas between said rub strip and said fan blades.

4,208,600

DISK/DRUM ACYCLIC MACHINE

Burton D. Hatch, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 21, 1978, Ser. No. 898,923
Int. Cl.[2] H02K *31/00*
U.S. Cl. 310—178 **37 Claims**



1. A high power density acyclic machine comprising in combination:
rotor means comprising:
a hollow rotatable shaft;
a first plurality of spaced electrically conductive rotor disks concentric with said shaft and affixed thereto in a first axial stack;
a second plurality of spaced electrically conductive rotor disks concentric with said shaft and affixed thereto in a second axial stack;
and an electrically conductive drum located between and concentric with said first and second stacks;
stator means comprising:
a hollow fixed shielding member of low magnetic reluctance material concentric with and surrounding said rotatable shaft at each end of said shaft;
a first plurality of spaced electrically conductive stator disks interleaved with said first plurality of rotor disks, said first plurality of stator disks being concentric with said fixed shielding member and affixed thereto in a third axial stack;
a second plurality of spaced electrically conductive stator disks interleaved with said second plurality of rotor disks, said second plurality of stator disks being concentric with said fixed shielding member and affixed thereto in a fourth axial stack; and
a hollow sleeve of low magnetic reluctance material located between and connected to said third and fourth stacks, said sleeve being concentric with and surrounding said drum; said stator means and said rotor means being separated throughout by a gap;
a plurality of electrically conductive liquid metal current collectors interconnecting said interleaved disks of said first and third stacks, said drum and said interleaved disks of said

second and fourth stacks in a single series electrical connection; and

means disposed within said hollow rotatable shaft for establishing a magnetic field passing generally axially through each of said pluralities of disks and passing generally radially through said drum.

4,208,601

DISTRIBUTOR FOR ELECTRIC D.C. MACHINE

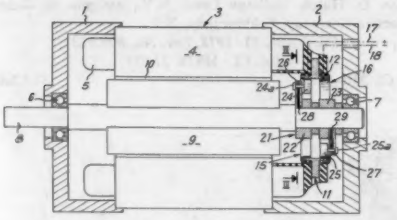
Pierre Tardieu, Chateauneuf sur Sarthe, France, assignor to Societe Anonyme Dite: ARTUS, France

Filed Nov. 22, 1977, Ser. No. 853,897

Claims priority, application France, Nov. 23, 1976, 76 35245

Int. Cl.[2] H02K *13/00*

U.S. Cl. 310—231 **8 Claims**



1. An electric D.C. machine having rotor and stator assemblies comprising:

a fixedly-mounted commutator including commutator bars forming an annular surface and being electrically connected to the windings of said stator assembly;

two independent and non-rotatable elastically deformable conductor rings concentrically disposed relative to said commutator, each of said conductor rings being connected to a pole of an electric source and being spaced apart from said commutator;

a moving element disposed internally of said commutator and including at least one rotating support member supporting at least two rollers offset with respect to each other;

means for urging said rollers radially outwardly and into engagement with said conductor rings to locally elastically deform each of said conductor rings to establish a moving electrical contact between said commutator bars and said conductor rings as said support member rotates relative to said conductor rings.

4,208,602

PIEZOELECTRIC ULTRASONIC SCANNING HEAD USING A BERYLLIUM MIRROR

Milton Stoller, West Hartford, Conn., assignor to Mediscan, Inc., South Windsor, Conn.

Filed Jan. 18, 1979, Ser. No. 4,392

Int. Cl.[2] H01L *41/10*

U.S. Cl. 310—335 **10 Claims**

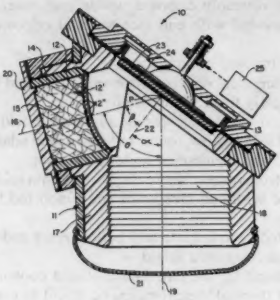
1. An ultrasonic scanning head for generating and receiving a scanning energy beam for non-destructive and non-invasive testing comprising:

a housing, said housing being filled with a liquid ultrasound transmission medium;

transducer means positioned in said housing for generating ultrasonic energy in the form of a beam having an axis, said being radiated into said transmission medium;

reflector means being positioned in said housing in the path of the beam of ultrasonic energy radiated from said transducer means to provide for incidence of said energy on a surface of said reflector means at an angle of transmission incidence, said reflector means comprising beryllium; and

means for moving said reflector means to thereby vary said angle of transmission incidence of said beam, said moving means constraining the minimum angle of transmission incidence to be greater than the angle at which surface



waves are excited at the interface of beryllium and said liquid transmission medium.

4,208,603

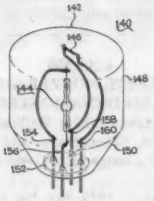
ELECTRIC LAMP HAVING IMPROVED INLEAD CONSTRUCTION

James A. Graves, Euclid, and Francis W. Pikus, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 8, 1979, Ser. No. 10,363

Int. Cl.[2] H01J *61/96;* H01K *1/20*

U.S. Cl. 313—1 **25 Claims**



20. An electric lamp having an outer transparent envelope which contains at least one resistive incandescent filament and an inner sealed arc tube as separate illumination sources and with each of said illumination sources being connected to a pair of conductive inlead wires of dispersion-strengthened copper alloy serving as the sole means of physical support for said illumination sources, wherein said inlead wires have a surface metallurgical structure of fibrous dispersion-strengthened copper alloy.

4,208,604

LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP

Winston D. Couwenberg, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 18, 1978, Ser. No. 934,684

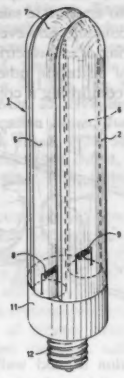
Claims priority, application Netherlands, Aug. 23, 1977, 7709266

Int. Cl.[2] H01J *5/16, 61/32, 61/42*

U.S. Cl. 313—113 **4 Claims**

1. A low-pressure mercury vapor discharge lamp which comprises: at least one U-shaped discharge tube, and a generally cylindrical body having recesses, each discharge tube having first and second legs, each of said legs of said discharge tube being disposed at least partly in said recesses, said legs extending along the circumference of said body over an angle

of at least 150°, said generally cylindrical body being transmissive to light, each of said U-shaped discharge tubes being



disposed in substantially coplanar relationship with the axis of said generally cylindrical body.

4,208,605

ALUMINA, CALCIA, BARIA SEALING COMPOSITION OPTIONALLY MODIFIED WITH B_2O_3

Charles I. McVey, Shaker Heights, and Ranajit K. Datta, East Cleveland, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 851,439, Nov. 14, 1977, abandoned. This application Apr. 2, 1979, Ser. No. 26,021

Int. Cl.[2] **C03C** *3/00, 3/30;* **H01J** *17/18, 61/36*

U.S. Cl. 313—221 **13 Claims**

4. A sealed electric lamp comprising an envelope formed of an alumina ceramic tube having end closures, a pair of electrodes and a filling of an ionizable medium therein, and a sealant bonding at least one end closure to said tube, wherein the improvement resides in said sealant being the end product of melting and congealing in place a composition consisting essentially of the following proportions by weight:

CaO . . . 32 to 42%
BaO . . . 13 to 19%,
MgO . . . up to 1%,
Al_2O_3 . . . balance to make up 100%.

4,208,606

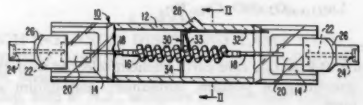
FILAMENT-SUPPORT MEANS FOR A TUBULAR INCANDESCENT LAMP

Ralph E. Newton, Dover, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 10, 1979, Ser. No. 2,286

Int. Cl.[2] **H01K** *1/24*

U.S. Cl. 313—274 **9 Claims**



1. In an electric incandescent lamp having an elongated tubular envelope that contains a helically-coiled filament which extends longitudinally within the envelope and is connected to lead-in conductors at least one of which passes through an hermetically sealed end of the envelope, the improvement comprising;

a filament-support member formed from wire and having (a) a leg portion that is anchored in the sealed end of the envelope and extends therefrom into the envelope proper proximate the wall thereof, (b) a retroverted medial segment that defines a hook which laterally protrudes from the leg portion and extends around and is thus coupled to a turn of the coiled filament, and (c) a stabilizing terminal portion that extends from said hook and is substantially disposed in a plane which is transverse to both the envelope axis and the coiled filament,

said stabilizing terminal portion being of such configuration and size that it engages the arcuate inner surface of the tubular envelope at a sufficient number of locations along the envelope circumference that the support member is nestingly interlocked with the envelope and thus holds the coiled filament in suspended position within the envelope.

4,208,607

ELECTRIC LAMP WITH TIN OR LEAD ALLOY PLUG FOR LEAD-IN

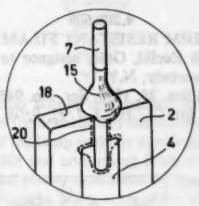
Pieter Hokkeling, and Roger J. Q. Van den Plas, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 8, 1979, Ser. No. 19,016

Claims priority, application Netherlands, Mar. 15, 1978, 7802796

Int. Cl.[2] **H01J** *5/50*

U.S. Cl. 313—332 **2 Claims**



1. An electric lamp having a glass lamp envelope with a pinch seal in which pinch seal at least one molybdenum foil is incorporated to which are connected an internal current conductor to an electric element accommodated inside the lamp envelope and an external current conductor projecting from the lamp envelope, the external current conductor being surrounded by a metal plug which is sealed to said current conductor and is in contact with the glass of the pinch seal, characterized in that the metal plug consists of at least a first metal selected from the group consisting of tin and lead mixed with at least a second metal selected from the group consisting of titanium, zirconium, hafnium, niobium, tantalum and vanadium, the weight ratio first-metal; second-metal being 100:0.05 to 100:1, the plug being also sealed to the glass of the pinch seal.

4,208,608

LAMP MOUNT STRUCTURE

Harold G. Anderson, Kirtland, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 13, 1978, Ser. No. 885,637

Int. Cl.[2] **H01J** *1/94, 19/48;* **H01K** *1/18*

U.S. Cl. 313—279 **4 Claims**

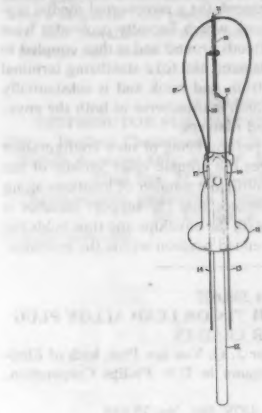
1. A lamp mount comprising: first and second inner lead wires, said first inner lead wires being longer than the other;

first and second lead out wires;

a flare in which one end of eahc of said first and second inner lead wires is embedded and is electrically connected to one of said lead out wires which exit the flare for connection to a power source

said first inner lead wire being curved in a loop and having

the other end thereof embedded and terminating in said flare; and



a light source having one end attached to said first inner lead wire approximately at the middle thereof and having the other end thereof attached to the free end of said second inner lead wire.

4,208,609

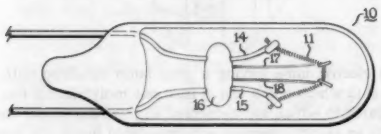
SQUIRM RESISTANT FILAMENT

Ivan Berlec, South Euclid, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 25, 1978, Ser. No. 945,793

Int. Cl.[2] H01K *1/42, 9/08*

U.S. Cl. 313—315 **4 Claims**



1. An incandescent lamp having reduced filament squirm comprising a coiled coil refractory metal filament characterized by second coiling mandrel ratio below 150%, a second coiling pitch ratio greater than 160%, and a power dissipation of less than 25 watts; and a pair of lead wires attached one to each end of said filament, said filament being mounted under axial tension between said lead wires.

4,208,610

TELEVISION PICTURE TUBES HAVING AN ELECTRON GUN WITH APERTURE ELECTRODE SHIELDING MEANS

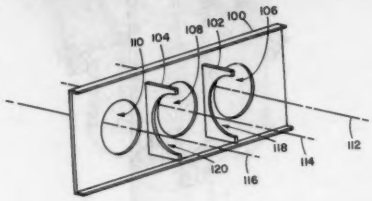
James W. Schwartz, Deerfield, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Jun. 9, 1978, Ser. No. 913,985

Int. Cl.[2] H01J *29/50, 29/56*

U.S. Cl. 313—414 **3 Claims**

1. In a television cathode ray picture tube having a plural-beam electron gun for projecting in superimposition on the picture imaging screen of said tube at least two electron beam spot, said gun including at least one aperture electrode having an aperture for passage therethrough of each of said beams, said beams being subject to a first-order aberration attributable to said aperture electrode resulting in the astigmatizing and consequent distortion of said beam spots due to the coalescing of electric field vectors contiguous to each aperture with the electric field vectors of at least one adjacent aperture, an improvement comprising shielding means interposed between said apertures comprising wall means, said wall means being effective to mutually shield said apertures and isolate said electric field vectors to ameliorate said first-order aberration, said wall means introducing, however, higher-order aberrations due to a disordering of said electric field vectors resulting in forms of beam spot distortion other than astigmatic, said improvement further comprising a configuration of said wall



means wherein a section of said wall means comprises an in-curving cut-out comprising at least a third of the area of said wall means, said cut-out being symmetrical about a plane defined by the axes of said apertures and so configured that there is greater shielding off-plane than on-plane, said cut-out being effective to re-order said electric field vectors and ameliorate the effect of said higher-order aberrations whereby said gun is enabled to project substantially undistorted beam spots.

4,208,611

FLUORESCENT LAMP CONTAINING A GREEN EMITTING RARE EARTH SILICATE COACTIVATED PHOSPHOR

Minoru Watanabe, Kawasaki; Toshio Nishimura, Yokohama; Tadao Omi, Yokohama; Kotaro Koomoto, Yokohama; Tomohiko Kobuya, Kawasaki, and Kenichi Shimizu, Fujisawa, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Apr. 12, 1978, Ser. No. 895,804

Claims priority, application Japan, Apr. 13, 1977, 52/42337

Int. Cl.[2] C09K *11/46;* **H01J** *1/63*

U.S. Cl. 313—487 **13 Claims**

1. In a low pressure mercury fluorescent lamp provided with a phosphor layer formed of a first phosphor emitting blue rays having a maximum emission within wavelength range of 430 to 490 nm, a second phosphor emitting green rays having a maximum emission within wavelength range of 520 to 590 nm and a third phosphor emitting red rays having a maximum emission within wavelength range of 590 to 640 nm, the improvement being that the second phosphor emitting green rays has a composition expressed by the general formula:

$$Ln_{2(1-x-y)}O_3 \cdot zSiO_2 : Ce_{2x} \cdot Tb_{2y}$$

where;

Ln is at least one rare earth element selected from the group consisting of yttrium, lanthanum, gadolinium and lutetium,

x is 1×10^{-3} to 3×10^{-1} gram atom per gram atom of the total amount of all the rare earth elements,

y is 3×10^{-2} to 3×10^{-1} gram atom per gram atom of the total amount of all the rare earth elements,

z is 0.8 to 2.2 mol per mol of a rare earth oxide

and efficiently emits green rays when excited by ultraviolet rays.

4,208,612

LOW-VELOCITY ELECTRON EXCITED FLUORESCENT DISPLAY DEVICE

Takashi Hase, Fujisawa; Akiyasu Kagami, Ninomiyamachi; Yoshiyuki Mimura, Kamakura; Kinichiro Narita, and Minoru Hiraki, both of Chigasaki, all of Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka, Japan

Continuation of Ser. No. 701,128, Jun. 30, 1976, abandoned. This application Mar. 23, 1978, Ser. No. 889,421

Claims priority, application Japan, Jun. 30, 1975, 5080607; Jun. 30, 1975, 50/80608; Jul. 3, 1975, 50/82201; Jul. 3, 1975, 50/82202; Jul. 4, 1975, 50/81948; Jul. 4, 1975, 50/81949

Int. Cl.[2] H01J *29/20;* C09K *11/30*

U.S. Cl. 313—495 **4 Claims**

1. A low-velocity electron excited fluorescent display device comprising an anodic plate having a fluorescent screen on one side thereof, a cathode standing face to face with said fluorescent screen, and a sealed evacuated tube in which said anodic plate and said cathode are enclosed wherein said fluorescent screen is comprised of a fluorescent composition consisting of a mechanical mixture of indium oxide and a copper and aluminium-activated zinc cadmium sulfide phosphor represented by the formula

$$(Zn_{1-x}, Cd_x)S:Cu, Al$$

wherein the value x is within the range of $0 \leqq x \leqq 0.1$ and the amount of activators, copper and aluminum, is from 10^{-5} to 10^{-3} gram respectively per gram of zinc cadmium sulfide, $(Zn_{1-x}, Cd_x)S$, said indium oxide and said copper and aluminium-activated zinc cadmium sulfide phosphor being present in a mixing weight ratio ranging from 1:9 to 9:1.

4,208,613

LOW-VELOCITY ELECTRON EXCITED FLUORESCENT DISPLAY DEVICE

Takashi Hase, Fujisawa; Akiyasu Kagami, Ninomiyamachi Kawawa; Yoshiyuki Mimura, Kamakura; Kinichiro Narita, Chigasaki, and Minoru Hiraki, Chigasaki, all of Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka, Japan

Continuation of Ser. No. 759,842, Jan. 17, 1977, abandoned, which is a division of Ser. No. 701,128, Jun. 30, 1976, abandoned. This application Mar. 23, 1978, Ser. No. 889,540

Claims priority, application Japan, Jun. 30, 1975, 50-80607; Jun. 30, 1975, 50-80608; Jul. 3, 1975, 50-82201; Jul. 3, 1975, 50-82202; Jul. 4, 1975, 50-81948; Jul. 4, 1975, 50-81949

Int. Cl.[2] H01J *29/20;* C09K *11/18*

U.S. Cl. 313—495 **2 Claims**

1. A low-velocity electron excited fluorescent display device comprising an anodic plate having a fluorescent screen on one side thereof, a cathode standing face to face with said fluorescent screen and a sealed evacuated tube in which said anodic plate and said cathode are enclosed wherein said fluorescent screen is comprised of a fluorescent composition comprising a mechanical mixture of indium oxide (In_2O_3) and a silver activated zinc sulfide phosphor (ZnS:Ag) said indium oxide and said phosphor being present in a weight ratio of 1:9 to 9:1, the amount of silver contained in said phosphor being from 10^{-5} to 10^{-3} gram per one gram of zinc sulfide.

4,208,614

HIGH INTENSITY DISCHARGE LAMP WITH INTEGRAL MEANS FOR ARC EXTINGUISHING

Herbert S. Strauss, Paramus, and Lawrence Sheinberg, Howell Township, both of N.J., assignors to Duro-Test Corp., North Bergen, N.J.

Division of Ser. No. 577,096, May 13, 1975, Pat. No. 4,156,830. This application Nov. 13, 1978, Ser. No. 959,457

Int. Cl.[2] H01J *7/44, 13/46, 19/78;* H01K *1/62*

U.S. Cl. 315—73 **5 Claims**

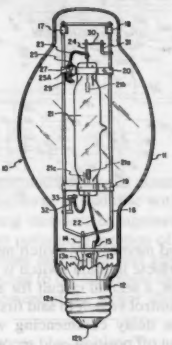
1. A safety protected high intensity arc discharge electric lamp for a ballasted type circuit which operates with a ballast means and supplies a predetermined value of voltage and current with said lamp having a nominal design rated life, comprising

a first envelope having means therein for producing in response to an applied voltage an arc discharge emitting optical radiation at least a portion of which is in the visible range and radiation in a range which is potentially harmful to humans,

means for applying voltage to the arc discharge producing means of said first envelope to produce the arc therein, and

a second normally sealed envelope within which the first envelope is mounted, said second envelope being of a material to block the potentially harmful radiation,

said means for applying voltage including safety means comprising an oxidizable resistively heated element of a



refractory metal within said second envelope, said element designed for operation at the rated operating voltage and current of the lamp without significantly degrading its design rated life and consuming from about 1% to about 3% of the total power consumed by the lamp and ballast means, said element being responsive to the breaking of the second envelope which admits a significant quantity of atmospheric air and exposure to the atmospheric air only to oxidize to the point when it breaks within a substantially predetermined time in the range of from about twenty-five seconds to about one hundred and five seconds to interrupt the voltage to the arc discharge producing means to thereby extinguish an existing arc and prevent the production of the potentially harmful radiation which could be radiated through the broken portion of the outer envelope.

4,208,615

AUTOMATIC HEADLAMP CONTROL SYSTEM

Billy R. Jones, Anderson, and John J. Sheridan, Middletown, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

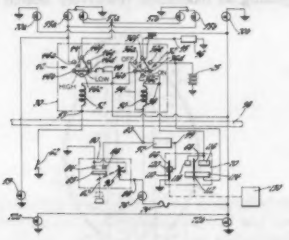
Filed Feb. 23, 1979, Ser. No. 14,309

Int. Cl.[2] B60Q *1/04*

U.S. Cl. 315—83 **4 Claims**

3. A system for controlling the energization of motor vehicle headlamps comprising, a source of voltage, headlamps for said motor vehicle, a headlamp control switch for controlling the energization of said headlamps from said voltage source having a first position in which the headlamps are deenergized, and a second position in which said headlamps are energized and in which the headlamp control switch connects one terminal of said source of voltage to a control terminal, electrically energizable means for shifting said control switch between said first and second positions each time said electrically energizable means is energized, first and second control switches operated in response to the position of a vehicle ignition switch such that when said vehicle ignition switch is in an off position

said first control switch is opened and said second control switch is closed, said first control switch being closed and said second control switch being open when said ignition switch is in a position other than said off position, a manually operable momentary switch means, delay means responsive to the closing of said second control switch, said delay means being operative to momentarily provide a conductive path therethrough following a time delay, light sensitive means operative to momentarily provide a conductive path therethrough when ambient light falls below a predetermined level, a first circuit for providing manual on/off control of said headlamps comprising said source of voltage, said first control switch, said electrically energizable means, and said momentary switch means, whereby the position of said headlamp control switch is



shifted each time said momentary switch means is temporarily closed when said vehicle ignition switch is in a position other than said off position, a second circuit for automatically shifting said headlamp control switch to said first position upon the expiration of a time delay commencing when said ignition switch is shifted to an off position, said second circuit comprising said second control switch, said delay means, said control terminal, and said electrically energizable means, and a third circuit for automatically shifting said headlamp control switch to said second position when said ignition switch is shifted to a position other than an off position and the ambient light falls below a predetermined level, said third circuit comprising said source of voltage, said first control switch, said electrically energizable means, and said light sensitive means.

4,208,616

INDUCTIVE STABILIZATION BALLAST FOR A DISCHARGE LAMP

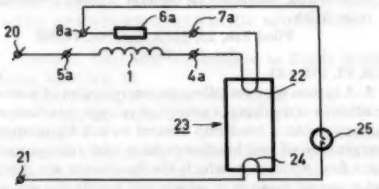
Jozef C. Moerkens, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 28, 1977, Ser. No. 837,400

Claims priority, application Netherlands, Oct. 14, 1976, 7611328

Int. Cl.² H05B *41/36*

U.S. Cl. 315—106 **7 Claims**



1. An inductive stabilization ballast for a discharge lamp comprising, a first pair of connecting elements between which the inductive portion of the ballast is connected, a second pair of connecting elements for connecting the ballast to the discharge lamp and to an external starter device for the lamp, a resistor having a positive temperature coefficient connected to the second pair of connecting elements, and container means housing said first and second pairs of connecting elements, said positive temperature coefficient resistor and said inductive portion of the ballast and with said first and second pairs of connecting elements providing terminals for connecting the ballast to the discharge lamp and to the starter device, the resistor having the positive temperature coefficient being disposed within the container means so that it is insulated both electrically and thermally relative to the inductive portion of the ballast.

4,208,617

LIGHT MEASURING UNIT FOR AN ELECTRONIC FLASH DEVICE

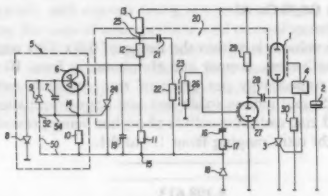
Arthur Schneider, Braunschweig-Volkenrode, Fed. Rep. of Germany, assignor to Rollei-Werke Franke & Heidecke, Brunswick, Fed. Rep. of Germany

Filed Aug. 16, 1978, Ser. No. 934,203

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1977, 2738984

Int. Cl.² H05B *41/32*

U.S. Cl. 315—151 **8 Claims**



1. A light detecting device for an electronic flash unit, said flash unit having a light flash generating device and supplying a first voltage signal when said flash generating device is operating and a second voltage signal when said flash generating device is not operating said detecting device responsive to incident light when said flash generating device is operating and otherwise not responsive to incident light, said light detecting device comprising:

(a) a phototransistor having a collector, base and emitter, said phototransistor connected in circuit with said flash unit;

(b) capacitor means charged by collector-base current of said phototransistor when said detecting device is responsive to incident light;

(c) diode means connected in circuit with said flash unit, said phototransistor and said capacitor means and responsive to said first and second voltage signals, said diode means enabling charging of said capacitor means in response to said first voltage signal and inhibiting charging of said capacitor means in response to said second voltage signal;

(d) said phototransistor generating collector-emitter current in response to charging of said capacitor means to a predetermined value for terminating operation of said flash generating device;

(e) said diode means comprises:

(i) a first diode having an anode connected to the base of said phototransistor and a cathode connected to ground potential and;

(ii) a second diode having a cathode connected to the base of the phototransistor and having an anode;

(f) resistor means connected at one terminal to said emitter of said phototransistor and at the other terminal to receive said first and second voltage signals, said first voltage signal being a negative voltage signal and said second voltage signal being a positive voltage signal; and

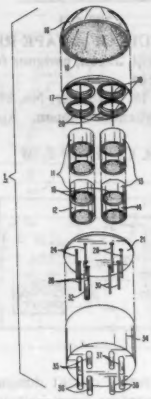
(g) said anode of said second diode connected to said resistor means.

4,208,618

COMPACT SINGLE-ENDED FLUORESCENT LAMP

Thomas H. Heine, Fairmont, W. Va., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 20, 1978, Ser. No. 944,229
Int. Cl.[2] H01J 8/06
U.S. Cl. 315—324 **14 Claims**



1. A single-ended low-pressure electric discharge lamp adapted for use as a compact light source in fixtures designed for residential and commercial lighting applications, said lamp comprising:

a sealed light-transmitting envelope formed by a plurality of hollow tubular members that are disposed in bundled columnar array and are hermetically joined to a hollow cap-like component that defines an end chamber which communicates with and is common to the open ends of each of the tubular members, the ends of each of said tubular members opposite said cap-like component being closed and coupled to base means having terminals;

a single electrode disposed within each of said tubular members;

lead-in conductors extending into the respective tubular members and connecting the associated electrodes with the base terminals; and

an ionizable medium within the columnar-shaped envelope adapted to sustain an electric discharge between a selected pair of said electrodes, when the lamp is energized, so that the discharge passes through said common end chamber and then extends into the respective individual tubular members which contain the electrodes that comprise the said selected pair of electrodes.

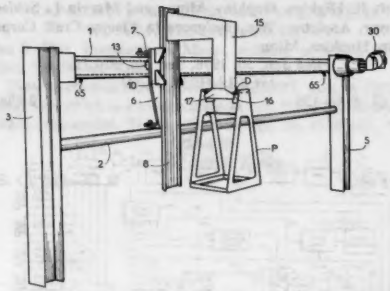
4,208,619

AUTOMATONS

Robert P. Delebecque, Sceaux; Georges A. Goupil, Vitry sur Seine, and Andre J. Velte, Le Chesnay, all of France, assignors to Societe Anonyme de Telecommunications, Paris, France

Filed Jul. 22, 1977, Ser. No. 818,336
Claims priority, application France, Aug. 6, 1976, 76 24077
Int. Cl.[2] H02K 7/00
U.S. Cl. 318—4 **3 Claims**

1. An automaton comprising a fixed frame, a horizontal guiding member carried by the frame, a carriage movable along said guiding member, a gripping member carried by the carriage and movable in a vertical direction relative to the carriage, a motor fixed on the frame, a first sprocket secured to the output shaft of said motor, an endless chain meshing with said first sprocket, an idle sprocket carried by said carriage and meshing with said endless chain, a pinion rotatable with said idle sprocket, a vertical rack carried by the gripping member and engaging said pinion, a clutching member secured to said output shaft, a freely rotatable disc engageable with said clutching member, a braking member engageable with said disc to restrain the latter against rotation, a second sprocket rotatable with said disc, a second chain meshing with said second sprocket and secured to the carriage for horizontal displacement when said disc and said clutching member are in



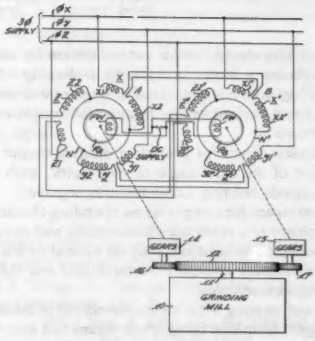
engagement, an electronic device for controlling operation of the motor and engagement of said disc with either one of said clutching and braking members engagement of said disc with said braking member permitting rotation of said pinion relative to said carriage to raise and lower said gripping member, and sensor means connected to the electronic device, for measuring the angular displacement of the motor shaft.

4,208,620

PLURAL ELECTRIC MOTORS DRIVING COMMON LOAD AND HAVING INTERCONNECTIONS FOR LOAD CONTROL

William L. Ringland, Haugen, Wis., assignor to Siemens-Allis, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 843,453, Oct. 19, 1977, abandoned, which is a continuation of Ser. No. 633,944, Nov. 20, 1975, abandoned. This application Jun. 15, 1978, Ser. No. 915,788
Int. Cl.[2] H02P 7/74
U.S. Cl. 318—111 **17 Claims**



1. A drive system comprising a pair of electric motors coupled to drive a common load for sharing thereof, each of said motors having a rotor and a stator with a rotating magnetic field generating polyphase winding thereon comprising plural phase windings energized from individual phases of a polyphase electrical power source to generate a rotating magnetic field within the stator, each of said phase windings including plural winding sections with at least one winding section con-

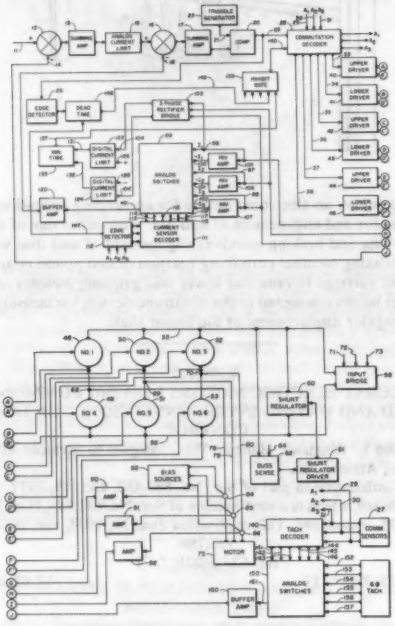
nected in series with a different winding section of the corresponding phase winding of the other motor to thereby permit the respective winding sections in each said phase winding to have different motor torque effects.

4,208,621

BRUSHLESS DC MOTOR CONTROL SYSTEM

Dennis R. Hipkins, Hopkins, Minn., and Marvin L. Schiedermayer, Appleton, Wis., assignors to Electro-Craft Corporation, Hopkins, Minn.

Filed Jun. 30, 1978, Ser. No. 920,722
Int. Cl.[2] H02K *29/00*
U.S. Cl. 318—138 **9 Claims**



1. A closed loop electric motor control system for electronically commutating a motor comprising a plurality of motor windings each of which is connected through power switching means to a direct current supply means, said system comprising, in combination:

position sensor means for providing discrete output signals indicative of the shaft angle of said motor, each of said output signals defining a commutation segment;

comparison means for comparing an operating characteristic of said motor to a reference characteristic and developing pulse width modulated error signal related to the difference between the reference characteristic and the actual operating characteristic;

decoding and steering logic means connected to receive said error signal from said comparison means and also responsive to the output signals from said position sensor means for providing drive signals to certain of said power switching means for sequentially energizing at least two of said motor windings to operate said motor responsive to said error signal thereby to reduce the magnitude of said error signal when the operating characteristic approaches said reference characteristic, said decoding and steering logic means operative to energize only power switching means associated with certain predetermined windings for each commutation segment whereby said motor shaft is driven by only those windings which produce maximum available torque; and

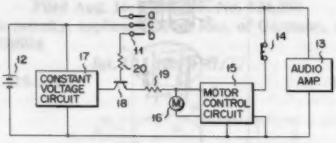
inhibit means constructed and arranged to block the said decoding and steering logic means from providing any drive signals when said inhibit means receives an inhibit signal.

4,208,622

MOTOR CIRCUIT OF A TAPE RECORDER

Tuneo Yanagida, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1978, Ser. No. 897,422
Claims priority, application Japan, Apr. 20, 1977, 52-49678[U]
Int. Cl.[2] H02P *7/08*
U.S. Cl. 318—257 **3 Claims**



1. A tape recorder motor circuit designed selectively to carry out at least the recording, reproduction, fast feeding and rewinding of a magnetic tape which comprises a D.C. power source circuit; a switching circuit provided with at least first and second output means and connected to the power source circuit; a motor control circuit connected to the first output means of the switching circuit; a D.C. motor connected to the output terminal of the motor control circuit; a switching transistor circuit whose control input terminal is connected to the second output means of the switching circuit; and a constant voltage circuit connected to the D.C. power source circuit to stabilize an output voltage therefrom, and wherein the first output means of the switching circuit supplies the motor control circuit with an output voltage from the D.C. power source in response to the recording or reproduction mode of the tape recorder; and the second output means of the switching circuit renders the switching transistor circuit conducting in response to the fast feeding or rewinding mode of the tape recorder, thereby controlling the motor circuit by an output voltage from the constant voltage circuit which has passed through the switching transistor circuit, said switching circuit being formed of a changeover switch interlocking with operation buttons for effecting the recording, reproduction, fast feeding and rewinding of the tape recorder; said changeover switch comprising a first contact connected to the D.C. power source circuit, a second contact connected to the motor control circuit to act as said first output means and a third contact connected to the control input terminal of the switching transistor circuit to act as said second output means.

4,208,623

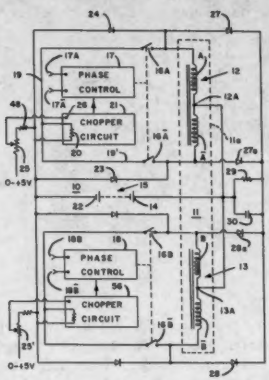
CHOPPING POWER SUPPLY FOR A BIFILAR STEPPING MOTOR

Albert C. Leenhouts, Harwinton, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed May 25, 1978, Ser. No. 909,590
Int. Cl.[2] G05B *19/40*
U.S. Cl. 318—696 **13 Claims**

1. A power supply for bifilar windings constituting one phase of a stepping motor comprising a source of unidirectional power, an end of each winding being connected to form a common junction that is connected to one side of the power supply, a switching device connected between the other end of each winding and the other side of the power source, phase control means connected to the switching devices for receiving a signal to close one of the switching devices, chopper

means interconnected with the phase control means to alternately open and close the one switching device and by-pass means connected in parallel with each switching device between the other end of each winding and the other side of the power source for conduction of current flow in the opposite direction to current flow through the switching device, said windings being inductively associated and wound to produce



the same magnetization for energizing current flowing from the power source through the common junction and current induced in the other winding and flowing in the opposite direction through the by-pass means associated with the other switching device and the common junction to the power source whereby the flow of induced current maintains magnetization when the one switching device is open.

4,208,624

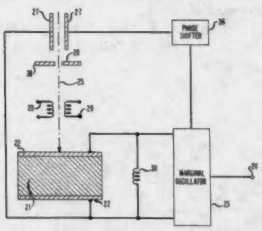
METHOD AND APPARATUS FOR INVESTIGATING DIELECTRIC SEMICONDUCTOR MATERIALS

Gabriel L. Miller, Westfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 9, 1978, Ser. No. 932,373

Int. Cl.[2] G01R *31/22, 27/26*

U.S. Cl. 324—60 R **10 Claims**



1. Method for determining electrical properties of at least a portion of a body of a dielectric or semiconductor material by measuring electrical admittance of a capacitor formed by two electrodes between which said body is disposed, said method comprising the steps of (1) applying an essentially sinusoidal electrical signal to said electrodes, (2) perturbing the electrical state of said portion in a pulsed fashion, and (3) determining admittance as the complex quotient of capacitor current and voltage CHARACTERIZED IN THAT (a) an inductor element is placed in parallel or in series with said capacitor, the inductance of said inductor element being selected to produce resonance at a desired frequency in the circuit formed by said capacitor and said inductor element and (b) perturbing the electrical state of said portion is synchronous to the phase of said signal whereby signal-to-noise ratio of said quotient is enhanced.

4,208,625

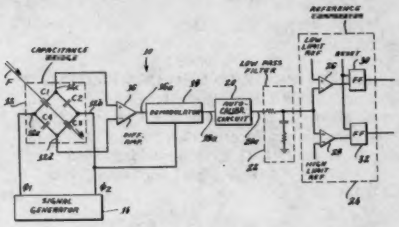
CAPACITIVE MEASURING SYSTEM WITH AUTOMATIC CALIBRATION

John S. Piso, Framingham, Mass., assignor to Micro Sensors, Inc., Holliston, Mass.

Continuation-in-part of Ser. No. 823,107, Aug. 9, 1977, abandoned, which is a continuation of Ser. No. 660,398, Feb. 23, 1976, abandoned. This application Apr. 20, 1978, Ser. No. 898,120

Int. Cl.[2] G01R *27/26*

U.S. Cl. 324—61 R **31 Claims**



1. In a device for continuously monitoring the characteristics of a moving filament by passing the filament through a capacitive sensor and developing an electrical analog signal the magnitude of which represents an absolute measurement of the filament with reference to a prescribed datum or zero point, the improvement which comprises:

means for developing an analog compensating signal to be combined with the analog filament measurement signal to produce a composite signal compensated for measurement signal drift arising from variations in the capacitive sensor, said compensating signal developing means comprising digital signal register means, a digital-to-analog converter having its input coupled to said digital signal register so that said converter produces an analog signal corresponding to the digital signal in said register to serve as said analog compensating signal; and

means for controlling the digital signal register to produce an analog compensating signal of value to effect zero condition for said device, the storage of said digital signal in said register eliminating drift in the analog compensating signal.

4,208,626

PRECISION TIMING SOURCE FOR MULTIPLE RATE SAMPLING OF HIGH-SPEED WAVEFORMS

Roland S. Gregg, Jr., Canoga Park, Calif., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Mar. 6, 1978, Ser. No. 883,363

Int. Cl.[2] G01R *23/16*

U.S. Cl. 324—77 A **10 Claims**

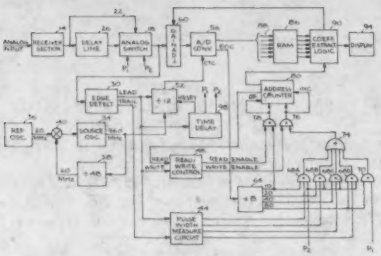
1. Apparatus for sampling a time-varying signal waveform at precise locations in time comprising:

source means providing clock pulses at a first rate;

means for detecting a predetermined characteristic of said waveform;

means responsive to the detection of said predetermined characteristic and said source means for generating a

series of strobe pulses at a second rate lower than said first rate; and



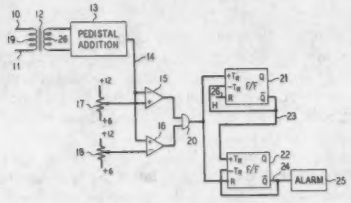
means for producing a digital code representing the amplitude of said waveform in response to each of said strobe pulses.

4,208,627

ALARM CIRCUIT TO DETECT SHORTING OF PERIODIC SIGNAL SOURCE

Harry K. Ebert, Jr., Hackettstown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 23, 1978, Ser. No. 953,443
Int. Cl.[2] G01R *19/00, 31/02;* G08B *21/00*
U.S. Cl. 324—102 **3 Claims**



1. A short-circuit detector for a periodic signal source comprising:

reference means for establishing an upper and lower magnitude limit;

monitoring means coupled to the reference means and operative for monitoring a periodic signal of said signal source and generating a first pulse signal having a pulse duration equal to a time interval of the presence of the periodic signal between the upper and lower magnitude limit;

a first timing circuit responsive to the first pulse signal generated by the monitoring means and operative to generate a second pulse signal having a time duration slightly exceeding a desired time interval of the presence of the periodic signal between the upper and lower magnitude limit; and

a second timing circuit coupled to be enabled by the first pulse signal and to respond to a termination of the second pulse signal when enabled in order to activate an alarm.

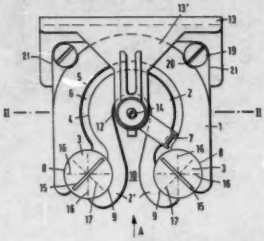
4,208,628

MEASURING MECHANISM HAVING A POSITIVE LOCKING ARRANGMENT FOR WIDE-ANGLE MOVING COIL SYSTEMS AND METHOD FOR ITS ASSEMBLY

Karl H. Rivoir, Am Nagoldhang 5, 7530 Pforzheim, Fed. Rep. of Germany

Filed Sep. 30, 1977, Ser. No. 838,395
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1976, 2645068
Int. Cl.[2] G01R *5/08*
U.S. Cl. 324—150 **16 Claims**

1. A measuring mechanism for a wide-angle moving coil system comprising: a mount with movable part, an inner and outer pole ring, and at least one permanent magnet, said mechanism having an arrangement of magnet and pole rings wherein said magnet and pole rings are physically maintained in relative position solely by coacting forces resulting from contiguous and contacting surfaces of said magnet and pole rings so as to mutually lock said elements relative to one another, said pole rings being mutually centered and fixed in this



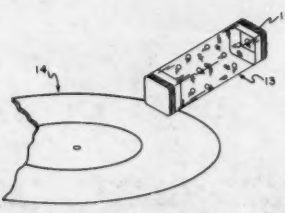
position, each of the pole rings having two arms, between which a slot is arranged, said movable part having axle means and a moving coil frame, wherein, for holding at least part of its moving coil frame, an internal spacing of said inner pole ring is arranged, which spacing is accessible from outside of the mechanism via said slot located between its arms, said slot having a width which is dimensioned so that the pre-assembled mount with corresponding coil frame can be inserted into the internal spacing of the inner pole ring.

4,208,629

STATIC ELECTRICITY INDICATOR

Virgil R. Friebel, Longmont; Kent G. Roller, and Jack L. Deitrick, both of Boulder, all of Colo., assignors to Ball Corporation, Muncie, Ind.

Filed May 8, 1978, Ser. No. 904,102
Int. Cl.[2] G01R *5/28*
U.S. Cl. 324—457 **1 Claim**

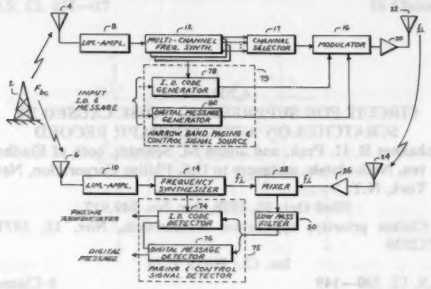


1. An electrostatic indicator for detecting a region of electrostatic density comprising free-flowing members having core portions of non-conductive material of about 1.0 lb/cu ft and a thin conductive layer surrounding said positions, said layer being about 1×10^{-6} to about 20×10^{-6} inch in thickness, said metal conductive layer being selected from a group consisting of iron, silver copper, aluminum, nickel and alloys thereof, and a transparent housing composed of an electrically insulating material to confine said free-flowing members therein.

4,208,630
NARROW BAND PAGING OR CONTROL RADIO SYSTEM

Louis Martinez, Carson, Calif., assignor to Altran Electronics, Inc., Harbor City, Calif.

Filed Oct. 19, 1978, Ser. No. 952,815
Int. Cl.[2] H04B 1/40, 1/00, 7/00, 1/16
U.S. Cl. 375—7 13 Claims



1. A narrow-band paging or control radio communication system comprising, in combination, a plurality of remote radio receivers, a central radio transmitter station, and an existing local radio broadcast station which transmits synchronizing reference signals to the central transmitting station and to the remote radio receivers; said receivers each comprising:

(A) first receiving antenna means for detecting the radio frequency carrier of the broadcast station,

(B) first tuned amplifier-limiter means connected to the output of the first receiving antenna means and tuned to the radio frequency carrier of the broadcast station so as to detect and produce hourly time beep output signals, and to remove amplitude modulation from said carrier and produce an output signal that is an amplitude-limited replica of the broadcast station radio frequency carrier,

(C) first frequency synthesizer means connected to output of the amplifier-limiter means to produce a synchronizing clock signal coherent with hourly beep signals at its first output and to phase-lock to the radio frequency carrier of the broadcast station to synthesize therefrom and provide at its second output a second radio carrier of predetermined frequency f_i, which frequency f_i may be different for each remote radio receiver and is different from but phase-locked to the radio frequency carrier of the broadcast station,

(D) second receiving antenna means for detecting radio signals from the central transmitter station at radio frequency f_i,

(E) tuned amplifier means having an input connected to the output of the second antenna means to amplify the received carrier f_i,

(F) synchronous mixer means having a first input connected to the second output of the frequency synthesizer means, and a second input connected to output of tuned amplifier means to thereby produce a demodulated signal at its output,

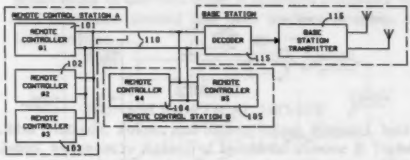
(G) low pass filter means having an input connected to the output of mixer means and providing output signals essentially identical to narrow-band paging or control signals sent by central transmitter,

(H) paging or control signal detector means having a first input connected to output of low pass filter means and a second input connected to first output of first frequency synthesizer means for amplifying and synchronously detecting identification codes and signals and displaying, annunciating and outputting said narrow-band paging or control signals to cooperating external apparatus.

4,208,631
DIGITAL PULSED DC REMOTE-CONTROL SYSTEM

Kermit M. Beseke, Schaumburg; James E. Hoffmann, Palatine, both of Ill., and Ronald J. Kopecki, Boulder, Colo., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 23, 1978, Ser. No. 918,549
Int. Cl.[2] H04Q 5/16
U.S. Cl. 455—92 13 Claims



1. In a remote control system including at least one control station connected via a wire line, having a predetermined audio frequency passband, to a base station having at least one transmitter operable on a plurality of radio channels, the control station sending messages over selected base-station radio channels, said remote control system including improvement comprising:

(a) the control stations including:

(i) a transmission switch, said transmission switch being activated for sending each message;

(ii) a plurality of channel switches, each channel switch corresponding to a pre-established base station radio channel, a selected channel switch being activated for each message;

(iii) pulse generating means responsive to the selected channel switch and each activation of said transmission switch for providing a command pulse train having a different predetermined number of consecutive pulses corresponding to each selected channel switch; said pulse generating means including oscillator means responsive to each activation of the transmission switch for providing a clock signal having a predetermined frequency within the predetermined audio passband of the wire line, counting means responsive to each activation of the transmission switch for totalizing the pulses of the clock signal and providing an output signal when the totalized number of pulses is the same as the predetermined number of pulses for the selected channel switch; and gating means coupled to the clock signal and counting means output signal for providing the command pulse train, wherein each cycle interval of the clock signal corresponds to a pulse of the command pulse train; and

(iv) first wire-line interface means responsive to each activation of said transmission switch for applying a DC voltage to the wire line and thereafter AC coupling the command pulse train from said pulse generating means to the wire line, said AC coupled command pulse train having a peak to peak voltage magnitude that is less than the DC voltage magnitude; and

(b) the base station including:

(i) second wire-line interface means for sensing the DC voltage on, and receiving the command pulse train from, the wire line;

(ii) counting means for totalizing the number of pulses of the received command pulse train; and

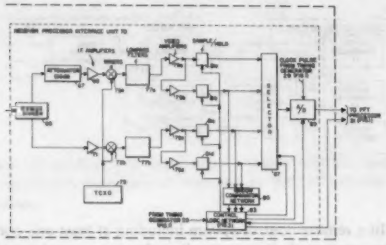
(iii) control means for enabling the base station to transmit the message on the radio channel corresponding to the totalized number of pulses of the received command pulse train.

4,208,632

RADAR RECEIVER

Edward J. Sheldon, Lexington; William C. Brown, Jr., Littleton; Thomas D. Shovlin, Arlington, and Ronald A. Wagner, Hudson, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Jun. 30, 1978, Ser. No. 921,628
Int. Cl.[2] G01S 7/30; H03K 5/20
U.S. Cl. 328—117 5 Claims



1. In a radar receiver wherein received signals having amplitudes which may vary within a wide range of possible amplitudes are processed, an improved intermediate frequency and video frequency amplifier arrangement having a dynamic range corresponding to the range of possible amplitudes of the received signals, such arrangement comprising:

(a) a plurality of amplifier channels, each one thereof having a linear response to received signals within a different portion of the range of possible amplitudes and being responsive to each received signal to produce a video signal out of each one of such channels;

(b) means, responsive partially to the video signals out of the plurality of amplifier channels, for producing a selector signal indicative of the particular one of the plurality of amplifier channels containing the largest video signal linearly related to the received signal; and

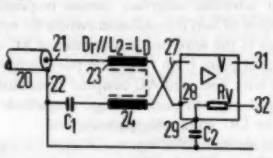
(c) means, responsive to the selector signal and to the video signal out of the particular one of the plurality of amplifier channels, for selecting such video signal for further processing.

4,208,633

CURRENT SUPPLY BRANCHING ARRANGEMENT FOR SEPARATION OF SIGNAL AND SUPPLY CURRENTS

Heinz Krause, Emmering, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 16, 1978, Ser. No. 916,289
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1977, 2729690
Int. Cl.[2] H03F 3/60
U.S. Cl. 330—56 8 Claims



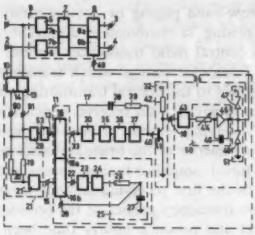
1. A current supply branching circuit for an amplifier having first and second input terminals fed by a coaxial cable having inner and outer conductors and for the separation of a signal current and a supply current, particularly for the power supply of a remotely-fed line amplifier which contains series-connected high pass filters and low pass filters as well as at least one line choke comprising two magnetically coupled windings with first ends connected to said coaxial cable which provide a very low resistance to the signal current flowing through said two windings in opposite directions, in that the second ends of said two windings (23, 24) of the line chokes (D_r) are connected to said first and second input terminals of said amplifier (V) by a pair of leads which cross one another.

4,208,634

CIRCUIT FOR SUPPRESSING NOISE CAUSED BY SCRATCHES ON A PHONOGRAPH RECORD

Johannes B. H. Peek, and Johan M. Schmidt, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 10, 1978, Ser. No. 949,917
Claims priority, application Netherlands, Nov. 15, 1977, 7712536
Int. Cl.[2] H03F 1/26
U.S. Cl. 330—149 8 Claims

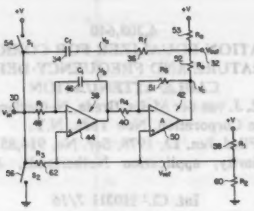


1. A circuit for suppressing pulse-shaped noise in an audio signal caused by scratches on a phonograph disc, comprising an audio frequency input and an audio frequency output; a signal processing section, connected between said audio frequency input and said audio frequency output, including a noise suppressor having a control input; as well as a control signal section connected between the audio frequency input and the noise suppressor control input, said control signal section being provided with a first threshold selection circuit connected to the audio frequency input for selecting pulse-shaped signals from the audio signal and a second threshold selection circuit connected between the first threshold selection circuit and the control input of the noise suppressor for selecting the pulse-shaped noise from the pulse-shaped signals of the first threshold selection circuit, this second threshold selection circuit comprising to this end a converter and a noise detector having a threshold, said converter being arranged between the first threshold selection circuit and said noise detector, the converter converting a pulse frequency from said first threshold selection circuit into a d.c. voltage for varying, depending on the pulse frequency, the ratio between the amplitude of the pulse-shaped signals of the first threshold selection circuit and the threshold voltage of the noise detector whereby pulse-shaped signals occurring above a specified frequency, which is indicative of the desired pulse-shaped music, will cause said converter to provide a negative d.c. voltage to said noise detector thereby preventing said noise detector from being activated by said pulse-shaped signals, while pulse-shaped signals occurring below the specified frequency, which is indicative of pulse-shaped noise produced by, for example, scratches, will cause said converter to provide substantially no negative d.c. voltage to said noise detector thereby allowing said noise detector to be activated by said pulse-shaped signals.

4,208,635
ACTIVE FILTER AND PHASE-LOCKED LOOP USING SAME

William B. Fazakerly, Saratoga, and Daniel R. Hafeman, Sunnyvale, both of Calif., assignors to Scientific Micro Systems, Inc., Mountain View, Calif.

Filed Aug. 14, 1978, Ser. No. 933,170
Int. Cl.[2] H03B *3/04;* H04B *15/00*
U.S. Cl. 331—17 16 Claims

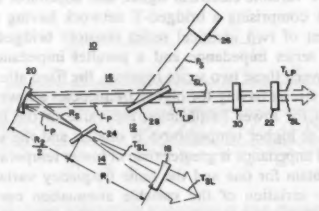


1. An active loop filter comprising
(a) an input terminal,
(b) an output terminal,
(c) first and second voltage potentials,
(d) means for generating a reference voltage,
(e) means connecting said reference voltage,
(e) means connecting said reference voltage to said input terminal,
(f) first switch means for connecting said first voltage potential to said input terminal,
(g) second switch means for connecting said second voltage potential to said input terminal,
(h) feed forward means connected between said input terminal and said output terminal,
(i) non-inverting integrator means, and
(j) means connecting said non-inverting integrator means between said input terminal and said output terminal.

4,208,636
LASER APPARATUS

Kenneth R. German, Fairport, N.Y., assignor to Burleigh Instruments, Inc., Fishers, N.Y.

Filed Dec. 16, 1977, Ser. No. 861,159
Int. Cl.[2] H01S *3/094*
U.S. Cl. 331—94.5 P 21 Claims

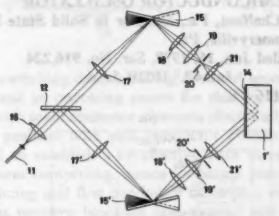


1. Laser apparatus which comprises
at least a first reflector and a second reflector having reflecting faces opposing each other to define an optically resonant cavity having an optical path between said reflectors, at least one of said reflectors having means for coupling light out from said cavity,
an active laser medium in said cavity and disposed along said path which emits a first beam of laser light of one polarization along said path when pumped,
a laser pump source which produces a second beam of laser light, and
a Brewsters angle polarization beam splitter in said cavity having a surface from which light of polarization opposite to said one polarization is reflected, said reflecting surface facing said pump source and being disposed at Brewsters angle with respect to said second beam and upon which said second beam is incident and from which said second beam light which is of said opposite polarization to the polarization of said first beam is reflected colinearly with said first beam toward said laser medium to pump said laser medium.

4,208,637
TUNABLE OPTICAL DEVICE

Akihisa Matsuda, Tokyo, and Sigeru Iizima, Koganei, both of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Mar. 3, 1978, Ser. No. 883,328
Claims priority, application Japan, Mar. 9, 1977, 52-24743; Apr. 12, 1977, 52-40896
Int. Cl.[2] H01S *3/10*
U.S. Cl. 331—94.5 C 5 Claims



1. A method for the manufacture of a tunable optical device, which comprises
(a) dividing a laser beam into two laser beams so that the divided laser beams advance and impinge upon an opposed pair of twisted mirrors, said twisted mirrors being twisted at a fixed pitch in mutually opposite directions,
(b) causing the laser beams reflected by said twisted mirrors to be focused on a photosensitive resin layer formed on the surface of a substrate oriented to form an angle with said laser beams impinging thereon,
(c) developing the photosensitive resin layer thus exposed to the reflected laser beams for thereby producing a mask on the substrate,
(d) subjecting the substrate to plasma etching through the medium of said mask for thereby forming on said substrate a grating of a multiplicity of corrugations whose period is continuously varied, and
(e) coating the surface of the substrate containing the formed grating with a film selected from the group consisting of a high molecular thin film, a glass thin film and a semiconductor film.

4,208,638
HF OR DF CHEMICAL LASER USING LASER INDUCED CHEMISTRY

James A. Merritt, Pulaski, Tenn., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

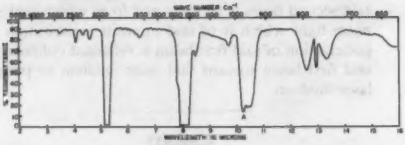
Filed Jul. 24, 1978, Ser. No. 927,327
Int. Cl.[2] H01S *3/223*
U.S. Cl. 331—94.5 G 3 Claims

1. A method for the production of nascent fluorine by irradiating COF_2 in admixture with H_2/D_2 to produce HF or DF in

an excited vibrational state which lases, said method comprising:

(i) preparing a homogeneous admixture of COF_2 and H_2/D_2;

(ii) metering said admixture of COF_2 and H_2/D_2 into a properly conditioned laser cell to achieve a predetermined pressure from about 25 to about 200 torr; and



(iii) irradiating said admixture of COF_2 and H_2/D_2 for a predetermined time period with the R_{12} line of a cw CO_2 multiline laser operating at a predetermined power level to effect dissociation of COF_2 to produce nascent fluorine atoms which immediately react with H_2/D_2 present to produce HF or DF in an excited vibrational state which lases.

4,208,639

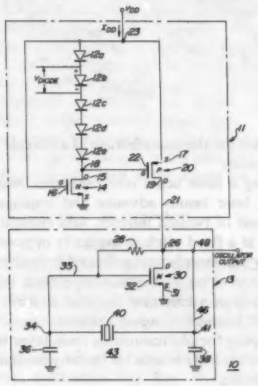
CONSTANT CURRENT SOURCE STABILIZED SEMICONDUCTOR OSCILLATOR

Tedd Stickel, Chalfont, Pa., assignor to Solid State Scientific Inc., Montgomeryville, Pa.

Filed Jun. 16, 1978, Ser. No. 916,224

Int. Cl.² H03B 5/36

U.S. Cl. 331—116 FE **8 Claims**



1. An oscillator having a substantially stable frequency in an environment of wide power supply potential excursions of about six to one comprising

an oscillator network,

a first CMOS semiconductor device coupled by way of a first and second node to the oscillator network to provide a 180° phase shift between said nodes,

constant current source means for providing full operating current for said oscillator network including a second CMOS semiconductor device constantly connected only between said second node and said power supply and free of a feedback loop with said oscillator network, a plurality of diodes coupled in series circuit between two terminals of said second semiconductor device one of which is a gate terminal and a third CMOS semiconductor device connected across said plurality of diodes for producing a substantially constant biasing potential for said second device only when the potential of said power supply exceeds the value of the plurality of unidirectional device drop potentials whereby the voltage at said first and second nodes is without said feedback maintained relatively independent of the about six to one potential excursions of said power supply potential thereby to produce frequency stability over those excursions.

4,208,640

ATTENUATION EQUALIZER FOR CORRECTING A TEMPERATURE AND FREQUENCY-DEPENDENT CABLE ATTENUATION

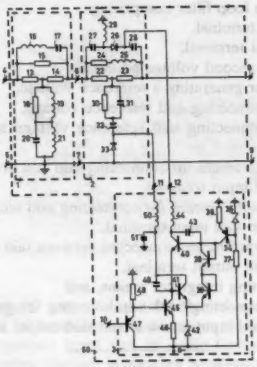
Antonius A. E. J. van der Meijs, Breda, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 12, 1978, Ser. No. 914,853

Claims priority, application Netherlands, Jul. 7, 1977, 7707542

Int. Cl.² H03H 7/16

U.S. Cl. 333—18 **3 Claims**



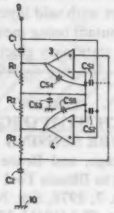
1. An attenuation equalizer for correcting within a frequency range the temperature and frequency-dependent attenuation variation of cables, comprising a fixed attenuation correction circuit an adjustable attenuation correction circuit connected in cascade with the fixed attenuation correction circuit, and a control circuit connected to said adjustable attenuation correction circuit and including a means for receiving a temperature variable electrical signal, said adjustable attenuation circuit comprising a bridged-T network having a series arrangement of two identical series resistors bridged by an adjustable series impedance and a parallel impedance connected between these two series resistors, the fixed attenuation correction circuit having for higher frequencies a lower attenuation than for lower frequencies, the value of the bridging impedance at higher temperatures is smaller and the value of the parallel impedance is greater than at lower temperatures in order to obtain for one and the same frequency variation an attenuation variation of the variable attenuation correction circuit which is greater at lower temperatures than at higher temperatures, the bridging impedance being inductive and the parallel impedance capacitive in said frequency range, and the difference between the attenuation of the fixed attenuation correction circuit at the extremes of its frequency range being at least substantially equal to the sum of the difference of the attenuation of the cable measured at the maximum cable temperature and any given operating temperature and the difference of the attenuation of the variable attenuation correction circuit measured at the minimum cable operating temperature and said given operating temperature.

4,208,641

HYBRID INTEGRATED IMPEDANCE CONVERTER CIRCUIT

Toshiro Suzuki, Hachioji, Japan, assignor to Hitachi, Ltd. and Hitachi Denshi Kabushiki Kaisha, both of, Japan

Filed Mar. 31, 1978, Ser. No. 892,420
Claims priority, application Japan, Apr. 8, 1977, 52-39521
Int. Cl.² H03H *5/04*
U.S. Cl. 333—217 **14 Claims**



8. A hybrid integrated impedance converter circuit comprising:

an input terminal and an earth terminal;

impedance means providing a plurality of impedance elements connected in series between said terminals;

a pair of operational amplifiers, each of which has an output terminal, an inverting input terminal and a non-inverting input terminal, said terminals being coupled to said impedance means through conductors, respectively; said converter circuit being susceptible to instability due to the occurrence of stray capacitances, and

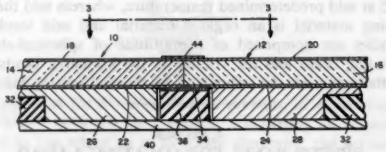
a negative feedback capacitor connected between said output and inverting input terminal of at least one of said amplifiers, said negative feedback capacitor being a stray capacitance deliberately formed between conductors connected to said output and inverting input terminals, said negative feedback capacitance being of a value to substantially stabilize operation of said converter circuit.

4,208,642

MODULAR MICROSTRIP TRANSMISSION LINE CIRCUITRY

Ronald J. Saunders, Santa Barbara, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 25, 1978, Ser. No. 954,713
Int. Cl.² H01P *1/04, 3/08*
U.S. Cl. 333—246 **7 Claims**



1. A modular microstrip transmission line circuit interconnect system, comprising:

(a) a base;

(b) a pair of microstrip circuits, each one having a dielectric substrate with strip conductor circuitry on one surface of such substrate and a ground plane on the opposite surface of such substrate;

(c) a pair of support structures, each one affixed to a corresponding one of the pairs of microstrip circuits, a portion of the ground plane of such affixed circuit protruding from an edge of such support structure, each one of such support structures being adapted to be removably attached to the base;

(d) means, including a resilient gasket, for forcing a conductor against the protruding portions of the ground planes of the pair of microstrip circuits, to provide a continuous ground plane between the pair of circuits, such resilient gasket being disposed between the base and the conductor; and

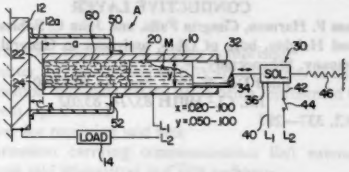
(e) a conductive strip connected to ends of adjacent strip conductors.

4,208,643

MAGNETICALLY ACTUATED MERCURY SWITCH

Alvin A. Snaper, Las Vegas, Nev., and Gary B. Zulauf, Pinckney, Mich., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Jun. 5, 1978, Ser. No. 912,220
Int. Cl.² H01H *29/00, 29/18*
U.S. Cl. 335—52 **25 Claims**



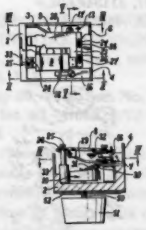
1. In a switching device having first and second conductor elements and an operating means for shifting between a first position with said conductor elements electrically isolated and a second position with said conductor elements electrically connected to establish a conductive path therebetween, the improvement comprising: means forming a passage having an opening facing said first conductor element; a mercury wettable porous member blocking said passage and adjacent said opening; a body of mercury; means for connecting said body of mercury to said second conductor element; and means responsive to said operating means being in said second position for forcing said mercury through said porous member and into electrical contact with said first conductor element.

4,208,644

ENERGY REGULATOR

Norman J. Turner, Tauranga, New Zealand, assignor to Actrol Industries Pty. Ltd., Melbourne, Australia

Filed Jul. 13, 1978, Ser. No. 924,284
Int. Cl.² H01H *61/02*
U.S. Cl. 337—102 **15 Claims**



1. An electrical energy regulator including; a body section; an actuator attached to said body section and having a heater associated therewith, part of said actuator being movable relative to the remainder thereof in response to energization of said heater; switch means secured to said body section and having a pair of control contacts and a pair of heater contacts, said

contact pairs being interconnected so that the contacts of one said pair are open when the contacts of the other said pair are closed, and vice versa; said switch means is connected to said actuator so that said contact pairs are caused to open and close in response to said movement of said actuator part; cam means movably mounted on said body section and being operable to influence the connection between said switch means and said actuator part to thereby alter the amount of movement of said actuator part necessary to cause conversion of said switch means from one operative condition in which said control contacts are open to another operative condition in which said control contacts are closed; and terminal means attached to said body section and being connectable to a power source; a first contact of each said pair of contacts is connected to said terminal means, the second heater contact is connected to said heater, and the second control contact is connectable to means for using power from said source.

4,208,645

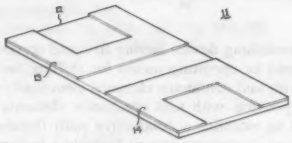
FUSE EMPLOYING ORIENTED PLASTIC AND A CONDUCTIVE LAYER

Thomas F. Harmon, Chagrin Falls, and John C. Sobieski, Richmond Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 9, 1977, Ser. No. 858,940

Int. Cl.[2] H01H *85/14, 85/02*

U.S. Cl. 337—297 **6 Claims**



1. A fuse comprising:

an oriented plastic substrate having a thickness proportional to the nominal current rating of the fuse;

a conductive layer cooperatively adhering to said substrate and having a thickness of from 0.5 to 2 mils;

wherein said fuse is characterized by a mechanical opening of said conductive layer at low overcurrent conditions and by a melting open of said conductive layer at high overcurrent conditions.

4,208,646

THERMALLY RESPONSIVE ELECTRIC SWITCH

John C. Taylor, 9 Homefield Park Ballasalla, Castletown, Isle of Man

Filed Mar. 21, 1978, Ser. No. 888,632

Claims priority, application United Kingdom, Mar. 23, 1977, 12287/77; Jul. 25, 1977, 31131/77

Int. Cl.[2] H01H *37/02, 37/52*

U.S. Cl. 337—372 **14 Claims**

1. A thermally responsive electric switch including two switch members formed from sheet metal, said switch members being disposed in face to face relationship, said switch members being electrically isolated from one another by a layer of electrical insulation sandwiched therebetween, at least a first of said switch members being physically deformed whereby said switch members are secured together by mechanical interengagement with one another, a first one of said switch members mounting a stationary electrical contact and a second one of said switch members mounting a snap-acting actuator of sheet bi-metal, said actuator being mounted on the face of said second switch member disposed opposite to that face which is in contact with said layer of electrical insulation, a movable electrical contact being mounted on the actuator for engagement with said stationary electrical contact.

4,208,647

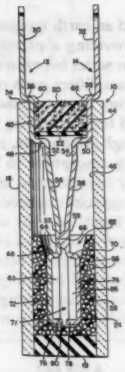
THERMAL SWITCH WITH ORGANIC-GLASS BEAD MIXTURE SENSING PELLET

John K. McVey, Chicago, and Bruce A. Luxon, Bensenville, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Sep. 7, 1978, Ser. No. 940,418

Int. Cl.[2] H01H *37/76*

U.S. Cl. 337—404 **17 Claims**



1. In a thermal switch comprising a housing, a pair of electrical leads, contact means in said housing for forming a circuit connection between said electrical leads and a thermal-sensing element for controlling said contact means, the improvement wherein said thermal-sensing pellet is formed of a multitude of solid insulating particles that are surrounded and held in a unified mass by a thermal-sensing material that melts at a predetermined temperature while said insulating particles remain solid at said predetermined temperature, wherein said thermal sensing material is an organic material and said insulating particles are comprised of a multitude of spherical-shaped insulating beads and the volume of the insulating beads substantially exceeds the volume of the thermal-sensing material.

4,208,648

SENSOR PANEL FOR LOCATING A LOAD

Karlheinz Naumann, Dittelbrunn, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Aug. 17, 1978, Ser. No. 934,484

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1977, 2737163

Int. Cl.[2] H01C *10/10*

U.S. Cl. 338—99 **7 Claims**

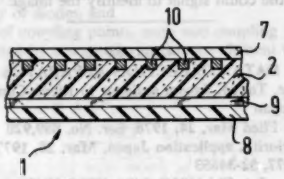
1. A sensor panel for sensing a load superimposed on one face of said panel, the panel comprising:

(a) a plate member having two faces defining therebetween the thickness of said panel,

(1) each of said faces having a width and length greater than said thickness,

(2) said plate member consisting essentially of an electrically conductive material varying in electric conductivity in response to pressure applied to said plate member in the direction of said thickness;

(b) a first group of conductors elongated in a common first direction and transversely spaced from each other;



(c) a second group of conductors elongated in a common second direction and transversely spaced from each other,

(1) said groups being respectively secured to said faces in electrically conductive contact,

(2) said first a second directions being angularly offset from each other.

4,208,649

APPARATUS FOR DETECTING PRESSURE IN PNEUMATIC TIRES

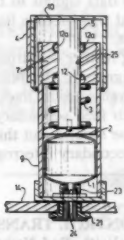
Athanase K. Sarides, 88 Baroness Crescent, Willowdale, Ontario M1P, Canada

Filed Jan. 2, 1979, Ser. No. 35

Claims priority, application United Kingdom, Oct. 17, 1978, 40916/78; Nov. 8, 1978, 43698/78

Int. Cl.[2] B60C *23/04*

U.S. Cl. 340—58 **5 Claims**



1. Apparatus for detecting loss of pressure in a pneumatic tire, while it is in use on a vehicle, comprising an actuator secured to the wheel so as to rotate therewith, the actuator including a slidably mounted piston movable linearly by the air pressure in the tire in accordance with the magnitude of the air pressure, a part of magnetically active material carried by the piston, and means causing the piston to move angularly about its direction of linear movement as the piston moves linearly to angularly orientate the part of magnetically active material in accordance with the magnitude of the air pressure in the tire, magnetically actuated means mounted on the vehicle so as to be variably actuated according to the angular orientation of the magnetically active part of the actuator as it rotates with the wheel, and indicator means connected to the magnetically actuated means to indicate loss of air pressure in the tire.

4,208,650

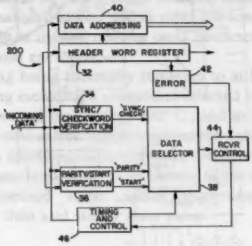
DATA TRANSMISSION SYSTEM

Robert Horn, Richardson, Tex., assignor to Forney Engineering Company, Carrollton, Tex.

Filed Jan. 30, 1978, Ser. No. 873,741

Int. Cl.[2] G08C *25/00*; H04L *7/00*

U.S. Cl. 371—47 **17 Claims**



1. A serial data transmission system comprising:

a transmitter for transmitting serially arranged bits of binary information with each binary value being represented by a different signal level;

a receiver for receiving said bits;

an information carrying communications link extending between said transmitter and said receiver;

means associated with said transmitter for arranging said binary bits transmitted by said transmitter in message frames having a preselected number of bit positions;

the first bit position of each of said message frames containing a marker bit having a predetermined binary value, the second bit positions of each of said message frames having a binary value opposite to that of said marker bit to provide a signal level transition between said first and second bit positions;

control means associated with said receiver in each message frame to said marker bit followed by a signal level transition between said first and second bit positions to the opposite binary value to enable said receiver to receive and respond to the remainder of the bits in each message frame unless enabled by said control means.

4,208,651

FINGERPRINT IDENTIFICATION BY RIDGE ANGLE AND MINUTIAE RECOGNITION

Donald H. McMahon, Carlisle, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed May 30, 1978, Ser. No. 910,810

Int. Cl.[2] G06K *9/12*

U.S. Cl. 340—146.3 E **17 Claims**

1. The method of recognizing a pattern of lines lying substantially in a single plane including the steps of: scanning said pattern of lines in a synchronized manner,

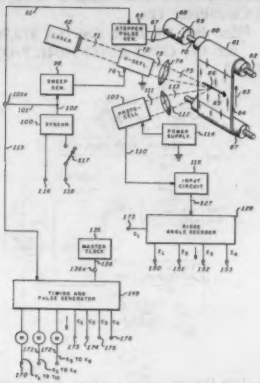
generating a first flow of binary data corresponding to the presence or absence of lines in successive locations of said scanned pattern of lines,

decoding said first flow of binary data, thereby generating a second flow of binary data representing the locations of only a predetermined side of each of said lines,

locating from said second flow of binary data the locations of end points of said one side of each of said lines, and

generating a control signal in response to location of said end

points for transferring said data to processor means for selecting only said locations of end points not lying in



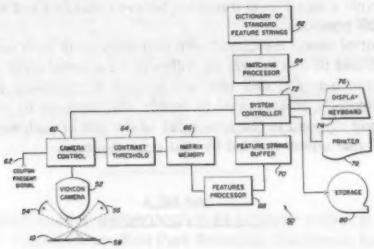
substantially colineal proximate relation to an associated end point.

4,208,652

METHOD AND APPARATUS FOR IDENTIFYING IMAGES

Robert Marshall, Clinton, Iowa, assignor to A. C. Nielsen Company, Northbrook, Ill.

Filed Sep. 14, 1978, Ser. No. 942,467
Int. Cl.[2] G06K *9/00*
U.S. Cl. 340—146.3 Y **27 Claims**



1. A method for automatically identifying an image, comprising the steps of:

reading said image with a scanning device and segmenting said image into a plurality of image elements;

providing a signal representative of a predetermined characteristic of each image element;

assigning one of first and second designations to each image element in response to the value of the portion of the signal representative of that element and providing a first or second value signal representative of the designation of each image element;

automatically determining from said first and second value signals the number of image elements disposed in a predetermined spatial relationship about preselected ones of said image elements assigned said first designation that have a designation predeterminedly related to said first designation and providing a signal representative thereof;

automatically determining from said first and second value signals the number of image elements disposed in a predetermined spatial relationship about preselected ones of said image elements assigned said second designation that have a designation predeterminedly related to said second designation and providing a signal representative thereof;

automatically determining from said number representative signals one of a plurality of predetermined values for each of said preselected image elements representative of the designation of each preselected element and the number of said predeterminedly related image elements disposed thereabout and providing a count signal representative of the number of preselected image elements having each of said predetermined values; and

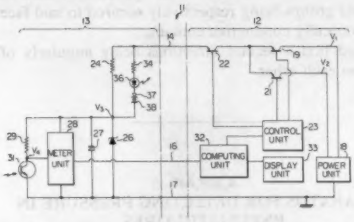
utilizing the count signal to identify the image.

4,208,653

DATA COLLECTION APPARATUS

Takeshi Abe, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 24, 1978, Ser. No. 889,920
Claims priority, application Japan, Mar. 28, 1977, 52-34270; Mar. 30, 1977, 52-34653
Int. Cl.[2] H04Q *9/06*; G08C *19/36*
U.S. Cl. 340—151 **7 Claims**



1. A data collection apparatus comprising:

a main station;

a remote station; and

first, second and third transmission lines connecting the main station to the remote station;

the main station being constructed to apply electrical power and interrogation signals to the remote station over the first and third transmission lines, the remote station being constructed to feed data signals to the main station over the second and third transmission lines in response to the interrogation signals;

the main station being further constructed to apply secondary interrogation signals to the remote station over the second and third transmission lines, the remote station being constructed to feed secondary data signals to the main station over the second and third transmission lines in response to the secondary interrogation signals.

4,208,654

REMOTE CONTROL TRANSMITTER

Alfred Vogt, Salz; Bernd Veith, Bad Neustadt, and Anton Rüttiger, Oberbach, all of Fed. Rep. of Germany, assignors to Preh, Electrofeinmechanische Werke, Jakob Preh Nachf GmbH & Co., Salz, Fed. Rep. of Germany

Filed Aug. 17, 1978, Ser. No. 934,618
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1977, 2738158
Int. Cl.[2] H04Q *9/14*
U.S. Cl. 340—351 **11 Claims**

1. Apparatus for transmitting remote control signals having an alternating sequence of two chronologically successive frequency pulses, the first said pulse having a first, predetermined frequency and the second pulse having a second, manually-selectable frequency, the apparatus comprising:

a plurality of manually operable command keys, each key supplying at a respective output a manually-selected command signal upon operation;

circuit means having a respective input coupled to each said key output for encoding and supplying on a plurality of outputs the received, manually-selected command signal in logic form;

circuit means for generating and supplying at resepective outputs two periodic logic pulse sequences which are the logical inverse of one another;

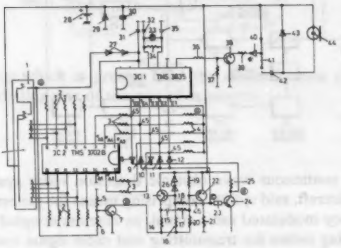
circuit means having a plurality of logic inputs for transmitting a signal having a frequency dependent on the logic signals supplied to said inputs;

a plurality of resistance elements;

a plurality of diodes; and

a matrix of coupling points, each said coupling point being connected by a respective resistance element to a respective encoding circuit means output, by a respective diode of predetermined polarity to one of said pulse generating circuit means outputs, and to a respective input of said transmitting circuit means,

the polarity of said diodes being predetermined such that during a first portion of the period of said generating circuit means said diodes are conductive to permit a predetermined logic command signal to be supplied from said generating circuit means outputs through said coupling points to said transmitting circuit means and such that during a second portion of said period said diodes are non-conductive to permit said encoded, manually-selected command signal to be passed through said resistors and said coupling points to said transmitting circuit means.

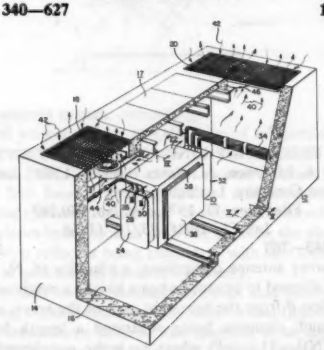


4,208,655

PROTECTIVE SYSTEM FOR ELECTRICAL APPARATUS

D. Colin Phillips, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 21, 1978, Ser. No. 879,183
Int. Cl.[2] G08B *17/10*
U.S. Cl. 340—627 **10 Claims**



1. A protective system for electrical apparatus, comprising:

an enclosure,

electrical apparatus disposed in said enclosure,

said enclosure having at least one opening which defines an air path from said electrical apparatus to the atmosphere,

monitoring means located to monitor the air flowig from said electrical apparatus through the at least one opening,

said monitoring means including an ion chamber having a steady state ion current value which is normally reduced in magnitude by particulates, incuding tobacco smoke and engine exhaust fumes, which enter the ion chamber,

a thermally activated coating on a predetermined surface within said enclosure,

said coating being thermally stable up to at least 200° C.,

said coating including a compound selected to decompose at a temperature higher than 200° C., and to produce matter which reduces the self-recombination rate of the ions in said ion chamber, to increase the ion current, and

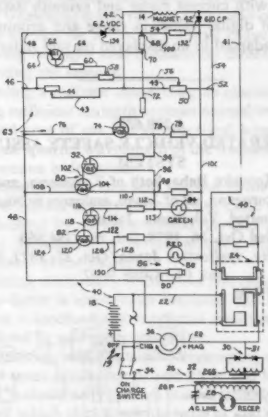
alarm means responsive to an increse in the ion current to a predetermined value, which predetermined value is greater than said steady state value.

4,208,656

BATTERY LIFT MAGNET CONTROL

Arthur K. Littwin, 6555 N. LeMai, Lincolnwood, Ill. 60646

Filed Jun. 12, 1978, Ser. No. 914,744
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—635 **9 Claims**



1. Electrical controlling and signalling apparatus comprising,

an electrical circuit,

a battery in the circuit,

an electromagnet in the circuit in series with the battery and adapted to be charged by the battery and when charged operable for magnetically holding a load,

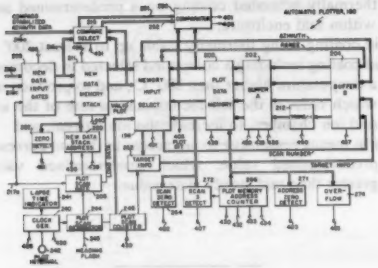
signal means in the circuit and including a SAFE indicator and an UNSAFE indicator, those indicators being in mutual parallel relationship but together in series with the battery and electromagnet, and

control means in the circuit, in series with the battery, electromagnet and signal means, operable in response to current in the circuit, for energizing the UNSAFE indicator when the electromagnet is not charged and energizing the SAFE indicator when the electromagnet is charged.

4,208,657
ELECTRONIC AUTOMATIC PLOTTER

Joseph E. Bryden, Framingham, Mass.; Ole J. Larsen, Birkeroed, and Desmond O'Callaghan, Virum, both of Denmark, assignors to Raytheon Company, Lexington, Mass.

Filed Aug. 16, 1978, Ser. No. 934,147
Int. Cl.[2] G01S 9/02
U.S. Cl. 343—5 DP 15 Claims



10. A radar plotting system comprising:

means for digitally storing in a first memory range and azimuth target data to provide plot data;

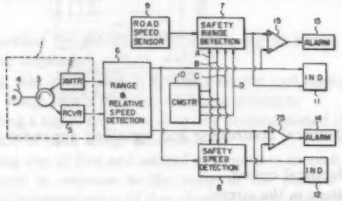
means for interleaving said stored range and azimuth plot data from said first memory into a second memory to provide a range and azimuth sequence corresponding to that of a real time sequence of range sweep and azimuth scans of a radar indicator; and

means for comparing digitally said stored range and azimuth plot data with current range and azimuth data in which equality of digital values in range and azimuth provide plot data adapted to be displayed on said radar indicator.

4,208,658
RADAR-OPERATED VEHICLE SAFETY ASSURANCE SYSTEM

Norio Fujiki; Kousaku Baba, both of Yokohama, and Akitoshi Mimura, Tokorozawa, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 26, 1978, Ser. No. 954,853
Claims priority, application Japan, Oct. 27, 1977, 52/128140
Int. Cl.[2] G01S 9/02
U.S. Cl. 343—7 VM 18 Claims



1. A vehicle safety assurance system comprising:

a radar device for detecting an operating parameter of the vehicle relative to an object, said operating parameter including the distance from the vehicle to the object;

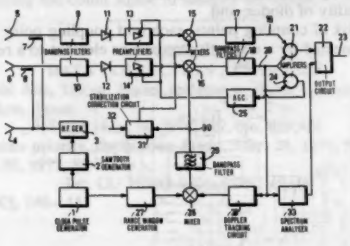
means for continuously deriving a safety limit value of the operating condition of the vehicle relative to said object as a function of the detected distance or as a function of roadway speed of the vehicle; and

means for visually indicating the difference between said safety limit value and said detected operating parameter.

4,208,659
SYSTEM FOR USE IN AN AIRCRAFT FOR OBSTACLE DETECTION

Roland Allezard, Verrieres le Buisson, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 1, 1978, Ser. No. 956,766
Claims priority, application France, Nov. 10, 1977, 77 33911
Int. Cl.[2] G01S 9/24
U.S. Cl. 343—14 1 Claim



1. A continuous wave obstacle detection radar system for use in aircraft, said system comprising means for generating an frequency modulated radio signal, an antenna coupled to said generating means for transmitting said radio signal toward an object to be detected, a first and second receiving antenna spaced from each other a given distance for receiving echo signals from the object, a first and second means, each coupled to said generating means and to a respective one of said receiving antennas, for producing a beat frequency signal between the transmitted radio signal and a signal received by the respective one of said receiving antennas, the frequency of said beat signals being representative of the relative velocity and the distance between said system and the object and the phase difference between said beat signals being representative of the bearing of the object, means for standardizing the amplitudes of said beat signals, means for deriving from at least one of said standardized amplitude signals a second signal indicative of the presence of an object within a predetermined distance from said system, said second signal having a frequency representative of said relative velocity between said system and the object, means for controlling the maximum frequency of said second signal, and means for analyzing the shape of the frequency spectrum envelope of said second signal to thereby produce an output signal indicative of the presence of an object within said predetermined distance.

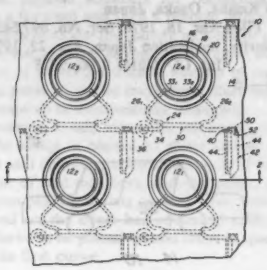
4,208,660
RADIO FREQUENCY RING-SHAPED SLOT ANTENNA

Sherwood A. McOwen, Jr., Santa Barbara, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Nov. 11, 1977, Ser. No. 850,743
Int. Cl.[2] H01Q 13/10, 13/18
U.S. Cl. 343—769 2 Claims

1. An array antenna comprising: a plurality of, N, antenna elements, adapted to produce a beam having a maximum angular deviation θ from the boresight axes of the array, adjacent ones of such elements being separated a length less than $a=(1-1/N)\lambda_H/(1+\sin\theta)$ where λ_H is the wavelength of the highest operating frequency of the antenna, each one of such elements comprising: a pair of substantially parallel electrically conducting plates in spaced-apart relationship at least two concentric apertures of substantially uniform width provided

in one of the conductive plates, an outer one of such pair of apertures radiating radio frequency energy having the wave-



length λ_H which is greater than the circumference of such outer radiating one of the pair of apertures.

4,208,661

ANTENNA WITH TWO ORTHOGONALLY DISPOSED PARABOLIC CYLINDRICAL REFLECTORS

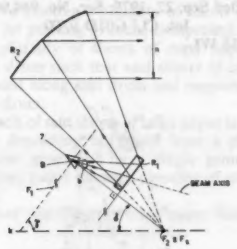
Vaclav J. Vokurka, 18, Van Hallstraat, Son en Breugel, Netherlands

Filed Jul. 6, 1977, Ser. No. 813,245

Claims priority, application Netherlands, Jul. 22, 1976, 7608162

Int. Cl.[2] H01Q *19/18*

U.S. Cl. 343—781 P **3 Claims**



1. An antenna system, comprising:

first and second reflectors in the form of substantially parabolic cylindrical surfaces and having respective first and second focal lines and first and second symmetry planes, said first focal line being skewed with respect to said second symmetry plane and said first and second symmetry planes being crossed with one another; the directrix of said first reflector being coincident with said second focal line in said second plane of symmetry,

a point feed source directed towards said first reflector having a phase center and located on said first focal line, said feed source have an axis disposed at an angle other than 90° from said first focal line so as not to cast a shadow on said second reflector; and

whereby the apparent line source of the cylindrical wave front produced by illumination of said first reflector coincides with said second focal line.

4,208,662

OMNIDIRECTIONAL, VERTICALLY POLARIZED ANTENNA

Dale W. Horn, Brecksville, and William A. Wickline, Willowick, both of Ohio, assignors to Orion Industries, Inc., Los Angeles, Calif.

Continuation of Ser. No. 349,983, Apr. 11, 1973, abandoned. This application Jun. 7, 1977, Ser. No. 803,451

Int. Cl.[2] H01Q *9/18, 9/36*

U.S. Cl. 343—792 **2 Claims**

1. A method of omnidirectionally, vertically polarizing an antenna for transmission and reception of radio communication frequencies to provide a prolate toroidal radiation sensitivity pattern having its major lobe consistently directed at the horizon comprising the steps of

(a) providing a radiator comprising an electrical conductor having sufficient strength to resist normal wind load in the intended area of use and an electrical length of substantially one-quarter wavelength of the frequencies for which said antenna is designed;

(b) electrically connecting said radiator to the inner conductor of a coaxial energy transmission cable insulated from and shielded by an outer conductor, said cable having a known impedance to be substantially matched by the impedance of the antenna;

(c) providing electrically conductive hub means from which said radiator is electrically insulated and by which said radiator is mechanically supported axially adjacent its end connected to said inner conductor;

(d) mechanically and electrically connecting said hub means to said outer conductor of said cable and to a lower skirt which is electrically conical at said radio frequencies, the apex of which skirt is substantially at said hub means and said skirt being comprised of at least three electrically conductive skirt elements substantially equally spaced from each other about said hub means and each skirt element having an electrical length substantially equal to the electrical length of said radiator;

(e) mounting said hub means upon the top of a vertically extending mast so that

(i) said radiator extends coaxially vertically above the top of said mast,

(ii) said skirt elements are grounded to said outer conductor of said cable through said hub means,

(iii) said mast carries said cable substantially parallel to an outer surface of said mast and thereby as a component of said mast for a distance below the lower edge of said skirt, and

(iv) said radiator and the inner conductor of said cable connected thereto are insulated from said mast if said mast is electrically conductive;

(f) mechanically staying with respect to said mast while not electrically connecting any of said skirt elements to any component of said mast to support each of said skirt elements at an angle with respect to the axis of said mast and of said radiator such that

(i) the lower edge of said skirt is electromagnetically de-coupled from said mast and the outer conductor of said cable relative to the electromagnetic coupling which would be induced if said skirt were electrically cylindrical and substantially closely concentric with an electrically conductive component of said mast,

(ii) the major lobe of the antenna's radiation pattern remains directed at the horizon,

(iii) the electromagnetic coupling between the said skirt elements and an electrically conductive component of said mast tends to concentrate toward the ends of the skirt elements connected to said hub means, and

(iv) the mechanical resistance of said skirt elements to wind loads is increased, and

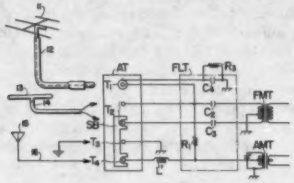
(g) mounting, on said radiator, means to provide a capacitive electrical cone of which an element is substantially parallel to a corresponding element of the electrical cone provided by said skirt, whereby the physical length of said radiator may be shortened and less than the effective electrical length of said radiator.

4,208,663

ANTENNA INPUT CIRCUIT FOR AM/FM RADIO RECEIVER

Minoru Ogita, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 27, 1977, Ser. No. 846,020
Claims priority, application Japan, Nov. 4, 1976, 51/148325
Int. Cl.[2] H01Q *21/30*
U.S. Cl. 343—853 **12 Claims**



1. An antenna input circuit for an AM/FM radio receiver, comprising:

a first antenna terminal connectible with a shielded coaxial cable from an antenna and having a first contact connectible with the center wire of said coaxial cable and a second contact connectible with the shield sheath of said coaxial cable, said second contact connected to the ground line of said circuit through a capacitor;

a second antenna terminal having third and fourth contacts connectible with a twin-lead type feeder from an antenna;

a third antenna terminal having a fifth contact connectible to a lead wire from an antenna;

a first input transformer including a primary winding having a first lead connected to said first contact and said third contact of the antenna terminals commonly through first AM broadcast signal eliminating means and a second lead connected to said fourth contact through second AM broadcast signal eliminating means; and

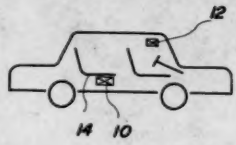
a second input transformer including a primary winding having a third lead connected to the ground line of said circuit and a fourth lead connected to said first contact and said third contact of the antenna terminals commonly through first FM broadcast signal eliminating means and to said fifth contact of the antenna terminal.

4,208,664

TAXI DRIVE CONDITION RECORDER SYSTEM

Hiroaki Mattori, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 18, 1978, Ser. No. 897,543
Claims priority, application Japan, Apr. 22, 1977, 52/47035
Int. Cl.[2] G01D *9/00, 9/28*
U.S. Cl. 346—15 **11 Claims**



1. A recorder system for a taximeter said taximeter used in a taxi for transporting passengers, said recording system comprising:

a detection means for developing a control signal when an operational mode of said taxi as indicated on said taximeter is changed, said detection means including switch means installed within said taxi and actuated in response to the introduction of said passengers into said taxi for indicating the presence of one or more passengers in said taxi and operational mode indication means installed within said taximeter and actuated by the driver of said taxi for indicating a change in said operational mode of said taxi, said control signal being developed when either said switch means or said operational mode indication means is actuated; and

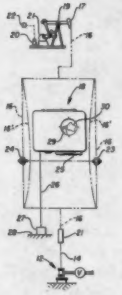
a recorder apparatus for recording the operational mode of the taximeter in response to said control signal.

4,208,665

DYNAMOMETER FOR MONITORING SUCKER ROD STRINGS

Manuel D. Mills, 2808Delano, Midland, Tex. 79701

Filed Sep. 22, 1978, Ser. No. 944,966
Int. Cl.[2] G01D *9/00*
U.S. Cl. 346—33 WL **12 Claims**



1. Apparatus for measuring tension in a pair of spaced, elongated, parallel members which cyclically reciprocate in a direction parallel to the members comprising, in combination:

a sensor means, spaced clamps attached to bias said spaced members out of parallel relationship, said sensor means being attached to said spaced clamps and producing a signal having a magnitude which is proportional to the biasing force;

a scribe mounted to be moved in proportion to the magnitude of said signal; chart means positioned so that move-

ment of said scribe relative to said chart means provides indicia on said chart means;

means responsive to the reciprocal motion of said spaced, elongated, parallel members for oscillating said chart means in a forward and then a reverse direction;

means responsive to the oscillatory movement of said chart means for successively advancing the chart means a finite increment of travel for a finite number of oscillations to cause the position of the oscillating chart relative to the scribe means to be continuously changed;

means responsive to said means for advancing said chart by which the scribe is caused to place indicia related to a curve on said chart for at least one cycle of reciprocating movement of said members; and thereafter, prevent said scribe from placing indicia on said chart until the indicia last placed on the chart has advanced sufficiently for a second curve to be placed on said chart in spaced relationship to the first curve.

4,208,666

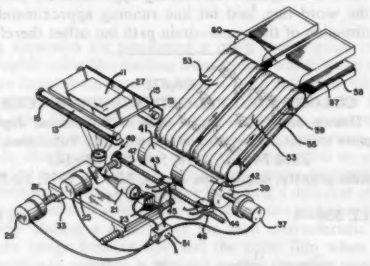
MULTIPLE COPY INK JET PRINTER

Suresh C. Paranjpe, Xenia, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Oct. 23, 1978, Ser. No. 953,459

Int. Cl.[2] G01D *15/18, 15/24;* B65H *5/22*

U.S. Cl. 346—75 **11 Claims**



1. A method of printing a plurality of sheets of copy paper utilizing an ink jet printing process, comprising the steps of

supplying a plurality of sheets of copy paper to a paper supporting drum such that said sheets of copy paper are axially spaced along said drum and supported thereby,

rotating said drum,

printing on each of said sheets of copy paper in succession by selectively depositing ink drops from a plurality of jet drop streams generated by a single print head onsaid sheets of copy paper during a plurality of rotations of said drum, and

removing all of said sheets of copy paper from said drum.

4,208,667

CONTROLLED ABSORPTION IN HETEROJUNCTION STRUCTURES

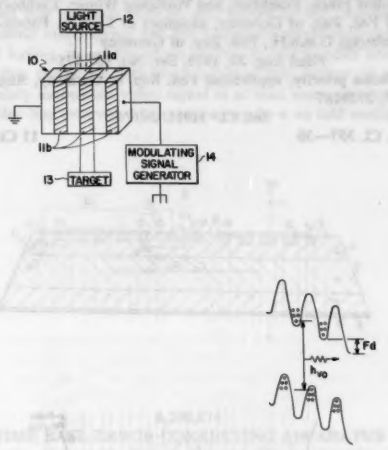
Leroy L. Chang, Lake Mohegan; Leo Esaki, Chappaqua, and George A. Sai-Halasz, Mohegan Lake, all of N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 9, 1978, Ser. No. 914,101

Int. Cl.[2] H01L *29/161*

U.S. Cl. 357—16 **3 Claims**

1. An optical device comprising: a semiconductor superlattice having two different materials arranged alternately in parallel layers to form a plurality of semiconductor heterojunctions; the bottom of the conduction band of one of said materials being lower than the bottom of the conduction band of the other of said materials to form a series of potential wells and potential barriers; the top of the valance band of said one of said materials being lower than the top of the valance band of said other of said materials to form a series of potential wells and potential barriers; means for directing light onto said optical device with a sufficient energy to create hole-electron pairs in said potential wells; and means for selectively applying a



voltage across said layers transverse to the plane of said heterojunctions for selectively causing changes in the spatial separation of said potential wells thereby selectively causing spontaneous recombination of said electrons and holes with a resultant emission of light.

4,208,668

CHARGE COUPLED DEVICE WITH BURIED ZONES IN A SEMICONDUCTOR SUBSTRATE FOR USE ESPECIALLY AS A LIGHT SENSOR

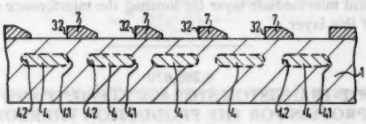
Eberhard Krimmel, Pullach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 9, 1978, Ser. No. 884,902

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1977, 2713876

Int. Cl.[2] H01L *29/78, 29/56;* G11C *19/28*

U.S. Cl. 357—24 **2 Claims**



1. A charge coupled device (CCD) comprising a semiconductor substrate of a first conductivity type and a plurality of electrodes arranged in spaced series relationship above said substrate, to form a plurality of capacitors therewith, said substrate having therein a plurality of buried, doped zones of a second conductivity type, also arranged in spaced series relationship, said electrodes being adapted to have potentials applied thereto to store and transfer charges in a given direction, said buried zones being so arranged with respect to said electrodes that, considered in the charge shift direction in use of the device, the front edge of any electrode of the series lies directly above the rear edge of a buried zone considered in the direction normal to the substrate surface, while the rear edge of said electrode overlaps the front edge of the next buried layer in the series, said electrodes being formed on said substrate as Schottky electrodes.

4,208,669

CONTROLLABLE SEMICONDUCTOR RECTIFIER WITH INTERFERENCE POTENTIAL COMPENSATION

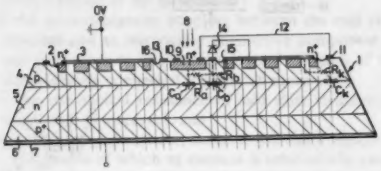
Dieter Silber, Hausen; Marius Füllman, Neu-Isenberg; Karl-Julius Finck, Frankfurt, and Wolfgang Winter, Eschborn, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs G.m.b.H., Fed. Rep. of Germany

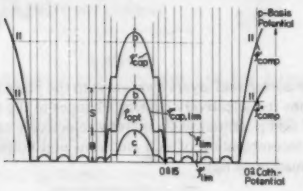
Filed Aug. 30, 1978, Ser. No. 937,975

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1977, 2739187

Int. Cl.² H01L *29/74*

U.S. Cl. 357—38 **11 Claims**





1. In a controllable semiconductor rectifier controllable by a control power and exposed to an interference potential, having a plurality of layers of different conductivity types, two outer layers thereof being provided with main electrodes and one of the outer layers adapted to be an electron or hole emitter having an area which is ignitable by the control power to be supplied and which upon occurrence of the interference potential receives a compensation potential which goes in the same direction as the interference potential of the adjacent intermediate layer in the area fired primarily by the control power, the improvement comprising means connected between said one outer layer adapted to be an electron or hole emitter and the adjacent intermediate layer for limiting the interference potential of this layer.

4,208,670

ONE-TRANSISTOR STORAGE ELEMENT AND A PROCESS FOR THE PRODUCTION THEREOF

Kurt Hoffmann, Taufkirchen, and Reiner Sigusch, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 943,066

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1977, 2743662

Int. Cl.² H01L *27/10*

U.S. Cl. 357—45 **10 Claims**

1. A one-transistor storage element system wherein each storage element has a selector MIS field effect transistor and a storage capacitor, comprising:

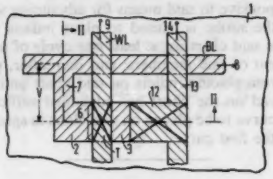
(a) a doped semiconductor layer of first conductivity type and oppositely doped zones therein which form source and drain zones of the transistor;

(b) a bit line formed of a strip-like, oppositely doped zone in the semiconductor layer which is connected to the source zone;

(c) a gate electrode of the transistor which is arranged in insulated fashion above the semiconductor layer and driven via a word line;

(d) the drain zone of the transistor connecting to a reference potential line through the storage capacitor;

(e) the word line comprising a first, strip-like part running transversely to a source-drain path of the transistor and formed of an electrically conductive coating which is separated from a surface of the semiconductor layer by an



insulating layer, a portion of the word line strip-like part forming at least a part of the gate electrode of the transistor and edge zones of the strip-like part defining a boundary of a channel zone of the transistor relative to the source and drain zones; and

(f) a source zone of the transistor connecting to the bit line via a connection zone running approximately parallel to the word line, said bit line running approximately in a direction of the source-drain path but offset therefrom.

4,208,671

COLOR VIDEO RECORDER/REPRODUCER

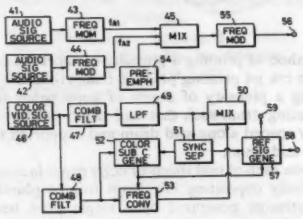
Keiji Ozawa, and Hisao Kinjo, both of Yokohama, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 7, 1978, Ser. No. 884,143

Claims priority, application Japan, Mar. 8, 1977, 52-25262

Int. Cl.² H04N *5/76*

U.S. Cl. 358—4 **8 Claims**



1. A recording system for recording an information signal on a recording medium which is to be reproduced by a reproducing system, said recording system comprising:

means for separating a color video signal into a luminance signal and a carrier chrominance signal in which a color sub-carrier is modulated by chrominance components;

a low-pass filtering means for limiting a frequency band of the separated luminance signal;

means for converting the frequency of the separated carrier chrominance signal into a lower frequency band, said converting means converting said carrier chrominance signal to a frequency band which is within but near the upper frequency limit of the limited frequency band of the luminance signal;

a first frequency modulating means for frequency modulating a carrier with at least one audio signal, the audio signal being frequency modulated to be above the limited frequency band of the luminance signal;

means for mixing the separated luminance signal, the frequency converted carrier chrominance signal, and the frequency modulated audio signal;

a second frequency modulating means for frequency modulating a carrier with the mixed signals; and

means for recording the output signal of the second frequency modulating means as a main information signal on a main information signal track of the recording medium.

4,208,672

METHOD AND APPARATUS FOR PRODUCING A COLOR THERMOGRAM ON PHOTOGRAPHIC FILM

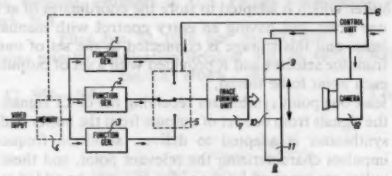
Tore Amèen, Upplands Väsby, and Jan E. B. Dahlqvist, Akersberga, both of Sweden, assignors to Aga Aktiebolag, Lidingo, Sweden

Filed Oct. 23, 1978, Ser. No. 953,353

Claims priority, application Sweden, Nov. 7, 1977, 7712554

Int. Cl.[2] H04N *9/06*; G02B *5/18*; G03B *27/04*

U.S. Cl. 358—6 **12 Claims**



6. An apparatus for producing a color thermogram on a photographic color film starting from images which are generated in an image forming unit such as a black and white television monitor screen and which are projected onto color film through color filters, said apparatus comprising a converter for receiving an incoming video signal and for converting the amplitude distribution of said incoming video signal so as to conform to that of at least two selectable intensity-temperature characteristics, a color filter device including a different color filter for each of said at least two characteristics and means for selectively placing a color filter for each characteristic between the image forming unit and the color film when the characteristic in question is selected so that the same parts of the image with achromatic colors conforming to those for the different intensity-temperature characteristics selected for the filters are projected through the different filters, whereby an image is obtained with hues varying between the colors represented by the different filters.

4,208,673

COLOR RECORDER FOR REDUCING CROSSTALK

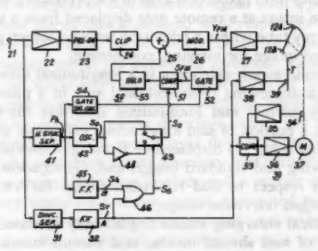
Toshihiko Numakura, Kamakura, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 12, 1977, Ser. No. 815,012

Claims priority, application Japan, Jul. 14, 1976, 51-83660

Int. Cl.[2] H04N *5/78*, *5/79*

U.S. Cl. 358—8 **69 Claims**



1. A method of recording a video signal component in successive parallel tracks on a record medium, said video signal component having signal information occurring in successive line intervals, comprising the steps of frequency modulating a carrier with said video signal component to produce a frequency modulated video signal; selectively shifting the phase of said carrier of said frequency modulated video signal in selected line intervals thereof; and recording the frequency modulated video signal and the frequency modulated video signal having its carrier phase shifted in said parallel tracks such that the phase difference between said carrier of said frequency modulated video signal in at least some adjacently recorded line intervals of successive tracks is an odd multiple of π.

4,208,674

TIME BASE ERROR CORRECTING APPARATUS

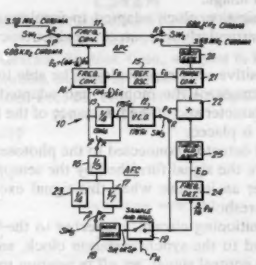
Yasunobu Kuniyoshi, Tokyo; Takashi Okada, Yamato, and Takao Sumi, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 14, 1977, Ser. No. 851,408

Claims priority, application Japan, Nov. 16, 1976, 51-138079; Nov. 20, 1976, 51-139811; Nov. 30, 1976, 51-144566; Dec. 23, 1976, 51-155241

Int. Cl.[2] H04N *5/76*

U.S. Cl. 358—8 **27 Claims**



1. Apparatus for eliminating time base errors from an information signal, comprising:

frequency converting means for frequency converting the information signal with a frequency converting signal;

means including variable oscillating means for generating said frequency converting signal;

automatic phase control means having a predetermined lock-in range and being responsive to time base errors of the information signal within said range to provide a respective phase error signal for controlling said variable oscillating means in the sense to eliminate such time base errors from the frequency converted information signal;

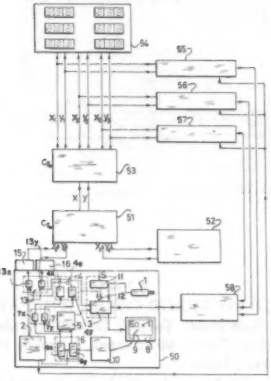
automatic frequency control means responsive to time base errors of the information signal to provide a respective frequency error signal; and

means for further controlling said variable oscillating means in response to said frequency error signal only when the latter corresponds to time base errors of the information signal that are beyond said lock-in range of the automatic phase control means.

4,208,675
METHOD AND APPARATUS FOR POSITIONING AN OBJECT

Jean Bajon; Michel Cattoen; Jacques Douchez, all of Toulouse, and Jean-Pierre Morucci, Portet-sur-Garonne, all of France, assignors to Agence Nationale de Valorization de la Recherche (ANVAR), Neuilly-sur-Seine, France

Filed Mar. 20, 1978, Ser. No. 888,558
Int. Cl.[2] H04N *7/18*
U.S. Cl. 358—93 **10 Claims**



1. Device to permit positioning of an object or a body in space reproducibly, comprising:

a television camera adapted to furnish a video signal corresponding to the object,

a television monitor coupled to the camera to show the captured image,

a synchronization clock adapted to furnish time reference signals particularly to control the electronic sweep of the camera,

a photosensitive sensor, provided to be able to be displaced on the screen of the monitor and adapted to deliver a signal characteristic of the luminance of the zone opposite which it is placed,

a threshold detector, connected to the photosensitive sensor to receive the signal furnished by the sensor and adapted to deliver an impulse when this signal exceeds a determined threshold,

a frame positioning circuit, connected to the threshold detector and to the synchronization clock, and adapted to deliver a control signal, set off in relation to the received impulse at vision frequency in order to center a frame around the zone opposite which the photosensitive sensor is placed,

a frame generator, connected to the positioning circuit and adapted to furnish a frame signal which can have two values, the one corresponding to a limited zone, called a frame, the other corresponding to zones outside the limited zone,

a set-off index circuit, controlled by the frame positioning circuit and adapted to deliver a set-off signal in relation to the signal issued from the frame positioning circuit, at vision frequency, in order to position an index on the outside of the frame in constant position in relation to the frame,

an index generator, connected to the set-off index circuit and adapted to furnish an index signal characterizing an image point,

a video mixer connected to the camera and to the frame generator and to the aforementioned index generator, and this mixer is connected at its output to the television monitor to furnish it with a video signal representing the image of the plane on which are superimposed the frame and the index, and said video mixer is adapted to confer a predetermined luminance on said frame,

a measuring assembly, connected to the index generator and to the clock to receive the signal issued from the index generator as well as the reference signals from the clock, and this assembly is adapted to measure the time separating the arrival of the index signals and reference signals, and said assembly furnishes signals characteristic of the position of the points in coincidence with the index,

a manually controlled selector, having two sets of inputs and one set of outputs and adapted to connect, according to the state of its manual control, its set of outputs to one of the sets of inputs, and one of these sets of inputs is connected to the measuring assembly to receive the signals issuing from it,

a storage which is adapted to store the coordinates of at least one point, and this storage has a set of outputs connected to the other set of inputs of the selector,

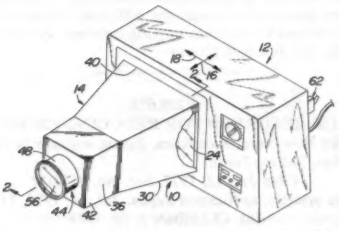
a buffer which is adapted to store the coordinates of at least one point and having an entry control with manual release, and this storage is connected to the set of outputs from the selector and is provided with a set of outputs for each point to be stored,

at least one point synthesizer receiving the clock signals and the signals from one set of outputs from the buffer and this synthesizer is adapted to deliver, at vision frequency, impulses characterizing the relevant point, and these impulses are received by the video mixer to be added to the video signal and to generate a superimposition on the monitor screen of at least one luminous zone of small dimensions.

4,208,676
TELEVISION PROJECTION SYSTEM

Leonard J. Berwick, 1215 Clubhouse Rd., Gladwyn, Pa. 19035; Jay I. Weiss, Lafayette Hill, and Norman M. Besden, Norristown, both of Pa., assignors to Leonard J. Berwick, Gladwyn, Pa.

Filed Jan. 17, 1978, Ser. No. 870,104
Int. Cl.[2] H04N *5/74*
U.S. Cl. 358—237 **29 Claims**



1. A television projection system for producing an enlarged television image at a remote area displaced from a screen of a cathode ray tube within a television set, said screen portraying a standard image for viewing, comprising:

(a) shroud means extending in a longitudinal direction having a decreasing cross-sectional area in a plane substantially normal said longitudinal direction throughout at least a portion of said longitudinal extension; said shroud means being (1) displaceable from said television set for viewing said standard image, and, (2) adjacently located with respect to said television screen for viewing said enlarged television image;

(b) optical enlarging means displaceably mounted to a first end of said shroud means, said shroud means having a second end longitudinally displaced from said first end and adapted to be positionally located adjacent said cathode ray tube screen, said optical enlarging means including a single lens element for projecting said enlarged

image to said remote area, said single lens element being mounted within a lens tube housing longitudinally displaceable with respect to said first end of said shroud means; and,

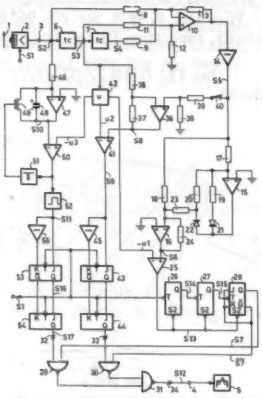
(c) switch inversion means electrically actuatable external said television set and connected to a vertical deflection circuit of said television set having (1) a first setting for providing an image on said screen which is vertically inverted and reversed in a transverse direction to said longitudinal direction; and (2) a second setting for providing said standard image on said cathode ray tube screen.

4,208,677

FACSIMILE CIRCUIT

Raymond G. G. Schayes, and Pol A. G. J. Gustin, both of Brussels, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 22, 1978, Ser. No. 917,974
Claims priority, application Belgium, Jul. 28, 1977, 179713
Int. Cl.[2] H04N *1/40*
U.S. Cl. 358—280 **7 Claims**



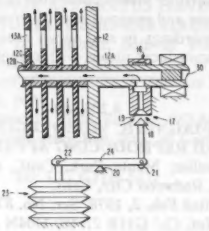
1. A facsimile circuit suitable for converting a facsimile signal which changes in a pulse-shaped manner and particularly corresponds to a text or changes gradually and particularly corresponds to a photograph, into a facsimile signal suitable for reproduction, the facsimile circuit comprising a detection circuit means for detecting at a detection circuit input the presence of a facsimile signal which changes in a pulse-shaped or a gradual manner, the detection circuit means comprising a signal differentiating circuit means comprising means for comparing a first portion of said facsimile signal with a portion of said facsimile signal that is delayed with respect to said first portion, and a threshold circuit means connected in series with the comparaing means for providing threshold signals in response to an output from the signal differentiating means that exceeds a predetermined value, a switching signal generator connected to an output of the detection circuit and receiving said threshold signals, a switch-over devive connected to an output of the switching signal generator and provided with a first and a second selection contact and a master contact, a pulse-binary signal conversion circuit connected to the first selection contact, an analog-binary signal conversion circuit connected to the second selection contact, said switch-over device selectively connecting either of the first and second selection contacts to the master contact in response to output signals from the switching signal generator, the master contact being connected to an output of the facsimile circuit.

4,208,678

STABILIZED ROTATION OF FLEXIBLE DISK FILES

William H. Laman, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 2, 1978, Ser. No. 947,389
Int. Cl.[2] G11B *17/00*
U.S. Cl. 360—71 **7 Claims**



1. The method of operating a record storage apparatus having a plurality of spaced co-rotating flexible record storage disks with means for enabling fluid communication from a tubular support spindle to axial spaces between each of said record storage disks, the steps of:

rotating said disks in unison and generating a predetermined outward radial air flow of a given mass from said tubular support spindle through said axial spaces;

sensing air temperature and pressure adjacent said storage apparatus for enabling control of the mass of air flow through said storage apparatus; and

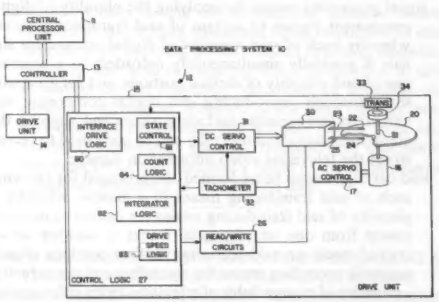
adjusting said mass of air flow to a substantially constant predetermined level in accordance with said sensing whereby rotational stability of said disks is maintained.

4,208,679

TRANSDUCER POSITIONING SYSTEM FOR ROTATING DISK DRIVE UNITS

Friedrich R. Hertrich, Boulder, Colo., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Feb. 28, 1978, Ser. No. 882,127
Int. Cl.[2] G11B *21/10*
U.S. Cl. 360—77 **20 Claims**



1. A disk drive unit for use in a secondary storage facility in a data processing system, said disk drive unit comprising:

A. a magnetic disk having a plurality of concentric magnetic tracks on a surface of said magnetic disk and centered on circular track centerlines, at least one track including a plurality of circumferentially spaced data sectors for recording data and first and second sets of spaced servo information blocks recorded in servo areas between adjacent data sectors, each said set including recordings of first and second asymmetrical, time-displaced, complementary signals located alternately in radially adjacent

blocks, the blocks in said first set being positioned with boundaries between adjacent blocks being aligned with track centerlines and the blocks in said second set be centered on the track centerlines,

B. means for rotating said magnetic disk,

C. movable transducer means positioned adjacent a surface of the disk for generating read signals in response to the recordings on said disk surface, and

D. servo controller means connected to said movable transducer means and responsive to the read signals produced by the recordings in said servo areas for locating said movable transducer means with respect to a data sector.

4,208,680

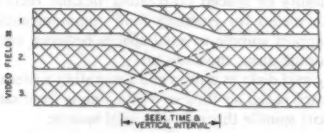
REAL TIME MAGNETIC VIDEO DIGITAL RECORDING AND REPRODUCING APPARATUS

Daniel A. Beaulier, Menlo Park, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Feb. 2, 1978, Ser. No. 874,440

Int. Cl.[2] G11B *21/08*; H04N *5/78*

U.S. Cl. 360—78 **7 Claims**



1. In an apparatus for recording on magnetic media a plurality of digital component signals which together comprise a television video information signal in the form of picture fields composed of horizontal lines separated by vertical blanking intervals, and for reproducing said component signals therefrom, comprising;

drive means for holding and rotatably driving magnetic recording means at a generally constant predetermined rotational speed;

said drive means including carriage means carrying a plurality of magnetic transducing means for recording on and reproducing from coaxial tracks on a plurality of recording surface portions of said magnetic recording means, individual transducing means being provided for individual ones of said recording surface portions;

signal processing means for applying the plurality of digital component signals to certain of said transducing means whereby each of said plurality of digital component signals is generally simultaneously recorded on a separate one of said plurality of surface portions, and for generally simultaneously reproducing said digital component signals from said separate surface portions and aligning the component signals so that they can be combined to reconstruct the television video information signals;

said carriage means being formed and arranged for carrying each of said transducing means in a manner whereby a plurality of said transducing means are caused to move in unison from one set of coaxial tracks to another set of coaxial tracks on said recording surface portions of said magnetic recording means for recording and reproducing a plurality of picture fields of television video information, there being one set of coaxial tracks for each individual picture field of television video information;

motor means for propelling said carriage and transducing means from a first set of said coaxial tracks to a second set of said coaxial tracks for switching from one picture field of television video information to the next;

motor control means for controlling the flow of power to said motor means for accelerating said carriage and transducing means in a direction from said first set of coaxial tracks to said second set of coaxial tracks and for controlling the flow of power to said motor means at a position of said transducer means intermediate that of said first and second sets of coaxial tracks for decelerating said carriage and transducer means so as to brake the motion of said carriage and transducer means in the region of said second set of coaxial tracks, said motor control means controlling said motor means so that the vertical blanking intervals separating recorded television picture fields occur at radially aligned regions of each recording surface of the magnetic recording means; and

means for sensing the onset of the vertical blanking interval region of the coaxial tracks and for initiating operation of said motor control means for energizing said motor means prior to the occurrence of the vertical blanking interval region, whereby acceleration of said carriage and transducer means toward the next set of coaxial tracks is commenced prior to the occurrence of the vertical blanking interval region so that said carriage and transducer means will transit the vertical blanking interval region between sets of coaxial tracks substantially within the period of the vertical blanking interval of the television video signal.

4,208,681

CARTRIDGE TYPE RECORD PLAYER HAVING A THREE POSITION HOLDER

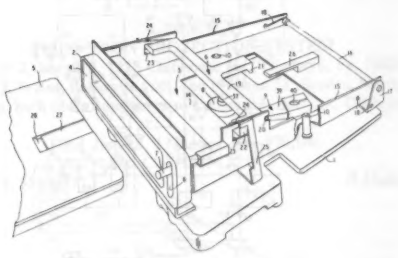
Michael R. Hatchett, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 8, 1978, Ser. No. 967,817

Claims priority, application United Kingdom, Dec. 23, 1977, 53646/77

Int. Cl.[2] G11B *17/02, 15/18*

U.S. Cl. 360—97 **8 Claims**



1. A cartridge type record player having a transducer mounted on a frame, a cartridge receptacle movably mounted on said frame and adapted to movably receive a record containing cartridge, the improvement including in combination:

bistable spring urged means coupled between said receptacle and said frame for yieldably holding said receptacle in a center load position remote from said transducer or in a play position adjacent said transducer for enabling movements therebetween,

overtravel stop means on said frame and spaced from said load position in a direction away from said play position to define an eject position, and

ejection means locking said cartridge in said receptacle in said center and play positions and responsive to contact with said overtravel stop means to release said cartridge for ejection from said receptacle.

4,208,682

POSITIONER CONE FOR FLEXIBLE DISKS

Philip S. Bryer, Woodland Hills, Calif., assignor to PerSci, Inc., Los Angeles, Calif.

Filed Oct. 2, 1978, Ser. No. 947,753

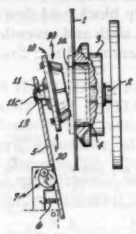
Int. Cl.[2] G11B *5/06, 25/04, 17/02*

U.S. Cl. 360—99 **6 Claims**

1. A positioner cone for positioning a flexible disk on a hub, comprising:

a trunkated cone made of plastic and having individual,

radially deflectible arms, extending obliquely in relation to an axis, an outer surface of each arm, being provided for engaging such a disk along an inner opening thereof:



a disk with annularly arranged apertures for retaining said arms along a circle, thereby determining an outer contour of the cone as defined by said outer surfaces; and

metal spring means received by the cone for biasing each said arms individually in radial outward direction.

4,208,683

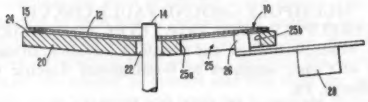
FRUSTO-CONICAL MAGNETIC RECORDING DISC

Stawomir P. Kleczkowski, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 13, 1978, Ser. No. 969,137

Int. Cl.[2] G11B *5/016, 5/82*

U.S. Cl. 360—99 **9 Claims**



1. A data storage disc comprising a circular sheet of magnetically coated flexible material having a frusto-conical recording profile.

4,208,684

DAMPER FOR CONSTANT LOAD ARM

Donovan M. Janssen; Raymond E. Kellow, Sr.; William A. Picker, all of Boulder, and Anton J. Radman, Jr., Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 11, 1978, Ser. No. 904,949

Int. Cl.[2] G11B *5/48*

U.S. Cl. 360—104 **6 Claims**

1. A head-arm assembly adapted to be mounted upon a carriage,

a base member for mounting the head-arm assembly to the carriage and including a mounting portion,

characterized in that:

an elongated rigid beam member extends away from said mounting portion;

pivot means for pivotably securing said rigid beam member to said mounting portion in a first plane,

one of said members having a laterally offset means laterally offset adjacent said pivot means;

spring-damping means rigidly secured to another one of said members and operatively connected between said base member and said rigid beam member via said offset means and including a friction sliding engagement with said laterally offset means for providing spring urging and damping functions between said base member and said rigid beam member along a plane offset from said first plane and said elongated rigid beam member.

4,208,685

DISK STORAGE APPARATUS HAVING AN ELECTRICALLY TUNED HEAD-CARRIAGE ACTUATOR

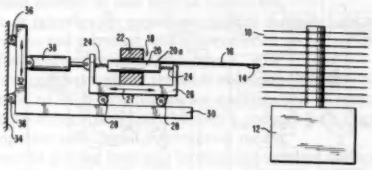
Arno Matla; Horst D. Matthaei, both of Waldenbuch, and Volker W. Zimmermann, Schoenaich, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 22, 1978, Ser. No. 962,844

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2759065

Int. Cl.[2] G11B *5/52*

U.S. Cl. 360—107 **3 Claims**



1. A record storage apparatus having a rotatable record disk rotating at a nominal rotational frequency but subject to rotational frequency variations, a head carriage assembly having a head carriage portion movably mounted with respect to said record disk for radial movements along a surface of the record disk, electromagnetic actuator means in said head carriage assembly having a magnetically movable portion connected to said head carriage portion for imparting said radial movements to said head carriage portion, said head carriage portion and said electromagnetic actuator means exhibiting a given mechanical resonant frequency,

the improvement comprising

means for sensing and electrically indicating the rotational frequency and frequency variations of said rotating record disk, and

additional means in said electromagnetic actuator means coupled to said sensing means and being responsive to said indication for applying predetermined opposing magnetic forces to said head carriage portion in proportion to said indication of said frequency variations for adjusting the dynamic mechanical operation of the head carriage portion and said electromagnetic actuator means from said exhibited mechanical resonant frequency to a dynamic mechanical resonant frequency tuned to the instantaneous rotational frequency of said record disk.

4,208,686

TAPE RECORDER WITH MEANS FOR DISPLAYING A TIME BY NORMAL AND STOPWATCH MODES

Masanobu Sato; Ken Satoh; Toshihiro Nakao, and Kenzi Furuta, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 22, 1978, Ser. No. 944,975

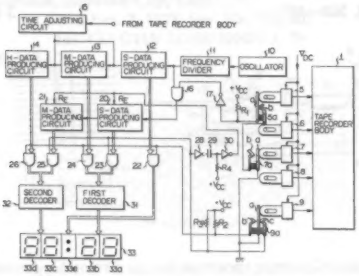
Claims priority, application Japan, Sep. 30, 1977, 52-117559

Int. Cl.[2] G06M *3/00*

U.S. Cl. 360—137 **3 Claims**

1. A tape recorder with means for displaying a time by normal and stopwatch modes wherein the time of normal mode is defined as the time indicated by a timepiece, and the time of stopwatch mode is defined as the time elapsed between a starting time and a stopping time, said tape recorder comprising:

a tape recorder body;
a display control switch group which is provided on said tape recorder body and includes a first switch actuated when said tape recorder is operated in record and play modes and a second switch for changing a normal mode time display over to a stopwatch mode time display and vise versa;
time signal generating means;
first time data generating means which is coupled with said time signal generating means and produces first time data of normal mode;
second time data generating means which is coupled with said time signal generating means and produces second time data of stopwatch mode;
decoding means which selectively receives said first and second time data and decodes the date received into display time data;



a time display unit for displaying the output of said decoding means;
a first control circuit in which, when said second switch is turned to the normal mode time display side, said first time data is supplied to said decoding means and said normal mode time data is displayed by said time display unit;
a second control circuit which, when said second switch is turned to the stopwatch mode time display, resets said second time data generating means; and
a third control circuit in which, when said first switch is operated in a state that said second switch remains turned to the stopwatch mode time display, said second time data is supplied to said decoding means and the time elapsed from the time point when said first switch is operated is displayed by said display unit.

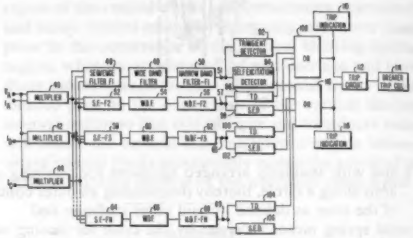
4,208,687

PROTECTIVE RELAY APPARATUS

Shan C. Sun, Bell Township, Westmoreland County, and Larry L. Church, Washington Township, Fayette County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 8, 1978, Ser. No. 959,045
Int. Cl.[2] H02H *7/06*
U.S. Cl. 361—20 **10 Claims**

1. Apparatus for providing output signals responsive to subsynchronous current flowing in a three-phase electrical power system having a three-phase voltage generated at a synchronous power generating frequency, comprising:
first means providing first, second and third signals, each responsive to the current flowing in a different phase of the three-phase electrical power system,
second means providing a fourth signal at the synchronous frequency having a constant amplitude,
third means processing each of said first, second and third signals with said fourth signal, to provide fifth, sixth and seventh signals, respectively, each having first, second and third components, said first, second and third components having frequencies responsive to (1) twice the synchronous frequency, (2) the sum of each subsynchronous frequency and the synchronous frequency, and (3) the difference between each subsynchronous frequency and the synchronous frequency,
wideband filter means tuned to pass said third component and to substantially block said first and second components, of said fifth, sixth and seventh signals,
and a first pair of filters tuned to a first predetermined sub-



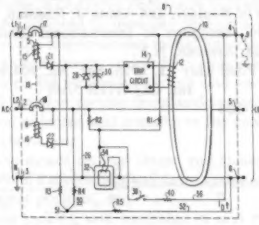
synchronous frequency, said first pair of filters including sequence filter means and narrow band filter means,
said first pair of filters and said wideband filter means cooperatively providing an output signal responsive to the positive sequence component of any subsynchronous currents flowing in the three-phase electrical power system at said first predetermined subsynchronous frequency, in response to said fifth, sixth and seventh signals.

4,208,688

MULTIPOLE GROUND FAULT CIRCUIT INTERRUPTER WITH TRIP LEVEL ADJUSTMENT

John J. Misencik, Shelton, and Ronnie D. Davidson, Bridgeport, both of Conn., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 13, 1978, Ser. No. 941,996
Int. Cl.[2] H02H *3/28*
U.S. Cl. 361—46 **5 Claims**



1. A multipole ground fault circuit interrupter comprising:
a differential transformer core, a plurality of primary windings on said core including at least two line conductors L1 and L2 and a neutral conductor for connection with the conductors of an AC electrical distribution system;
a secondary sensing winding on said core for sensing current unbalance between said primary windings;
means responsive to a predetermined sensed signal on said sensing winding to open said line conductors; and

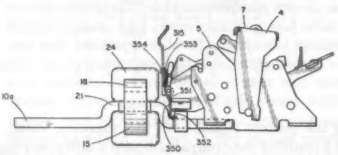
means for providing a desensitizing current when one of said line conductors L1 and L2 is energized and the other is not energized, said desensitizing current being absent when both said line conductors L1 and L2 equally and oppositely are energized.

4,208,689

CIRCUIT BREAKER HAVING AN ELECTRONIC FAULT SENSING AND TRIP INITIATING UNIT

Robert W. Dunham; James P. McGinnis, both of Cedar Rapids, and Henry J. Zylstra, Alburnette, all of Iowa, assignors to Square D Company, Palatine, Ill.

Filed Mar. 15, 1978, Ser. No. 886,962
Int. Cl.[2] H02H 3/28
U.S. Cl. 361—48 5 Claims



1. A circuit protective device to detect fault current conditions in an electrical power circuit having a plurality of conductors and protect said power circuit against such fault current conditions, including:

a separate pair of contacts for each conductor,

circuit interruption means including a spring operated toggle mechanism for each conductor controlling a trip shaft common to each pair of contacts and having a trip lever for each pair of contacts with each trip lever movable to move a respective latch pin for operating the respective toggle mechanism to control said trip shaft for moving each other trip lever and latch pin to operate each other toggle mechanism and separate each respective pair of contacts to interrupt said power circuit on occurrence of a fault condition,

transformer means providing an output corresponding to the current in said conductors,

solid state interruption initiating means controlled by said output to detect the occurrence of a fault current condition in any one of the conductors of said power circuit and having a coil energized on detection of a fault current condition to thereupon move one trip lever and one latch pin to operate the respective toggle mechanism to control said trip shaft for separating each pair of contacts and initiate interruption of said power circuit,

and independent temperature responsive bimetal for each conductor connected directly to a respective conductor to sense the temperature of a respective conductor and the surrounding ambient temperature thereof for moving the respective trip lever and latch pin including said one trip lever and latch pin independently of said solid state means and coil for operating the respective toggle mechanism and control said shaft to initiate interruption of said power circuit in response to said bimetal reaching a predetermined temperature.

4,208,690

CIRCUIT BREAKER HAVING AN ELECTRONIC FAULT SENSING AND TRIP INITIATING UNIT

James P. McGinnis, Cedar Rapids, and Henry J. Zylstra, Alburnette, both of Iowa, assignors to Square D Company, Palatine, Ill.

Filed Mar. 15, 1978, Ser. No. 886,963
Int. Cl.[2] H02H 3/28
U.S. Cl. 361—48 4 Claims

1. A circuit protective device to detect high fault currents and ground fault currents in an electrical power circuit and protect said power circuit, comprising:

a plurality of conductors including phase conductors and a ground return neutral conductor,

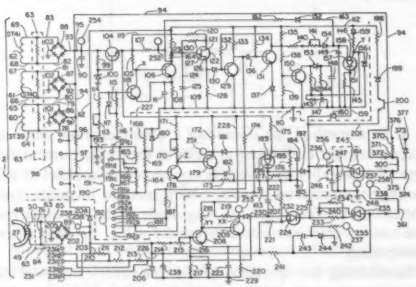
separable contact means for each conductor,

transformer means for each conductor, each transformer means including a current transformer having a respective step up transformer and a differential transformer common to each current transformer with the secondary of each current transformer connected through a respective primary of said differential transformer to the primary of the respective step up transformer, a first respective d.c. bridge connected to the secondary of each step up transformer, and a last d.c. bridge connected to the secondary of said differential transformer, the bridges having a common ground with the first bridges having a d.c. output level corresponding to the current in said conductors including a high fault current and said differential transformer having an output corresponding to the ground fault current in said neutral conductor,

circuit interruption means operable to separate said contact means and interrupt said power circuit on occurrence of a fault current in any conductor,

a first coil having one terminal connected directly in common to each first bridge for energization in response to both a high fault current and a ground fault current to operate said circuit interruption means,

a second ground fault coil having one terminal connected to said last bridge for energization in response to a ground fault current,



solid state means connected to each d.c. bridge for energization by the d.c. output of said bridges and controlled by the d.c. output level of the first bridges and said last bridge corresponding to a respective fault current to provide a respective fault signal, said solid state means including a respective gated semiconductor device connected to the respective other terminal of each coil, said solid state means rendering both of said devices conductive in response to a fault signal corresponding to a ground fault current to energize each coil and rendering one device conductive in response to a fault signal corresponding to a high fault current to energize said first coil, said energized first coil operating said interruption means to separate said contact means and indicate a fault condition,

a base carrying said conductors, contact means, transformer means, circuit interruption means and said first coil,

a cover carrying said solid state means, bridges and second coil,

means connecting the other terminal of said first coil to the respective semiconductor device and said bridges to a respective secondary in response to the engagement of said cover with said base in overlapping relationship to said circuit interruption means, transformer means, first coil and contact means,

other ground fault trip indicating means including visual indication means visible from the exterior of said cover and operated by said second energized ground fault coil,

and last means establishing one connection through said cover from the output of the last ground fault bridge and establishing another connection through said cover from said solid state means to enable the energization of a remote indicator by the output of said last bridge in response to the energization of said second coil by conductance of the respective semiconductor device.

4,208,691

CONTROL OF INVERTER CIRCUIT-BREAKER

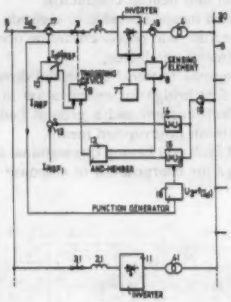
York Rogowsky, Berlin, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltung-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 21, 1978, Ser. No. 944,317

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1977, 2742997

Int. Cl.[2] H02H 7/122

U.S. Cl. 361—79 3 Claims



1. In a method for operating a direct current, high-speed circuit breaker connected in series at the direct current side of one of a plurality of inverters connected in parallel in a high voltage transmission system, which method includes opening the circuit breaker when the magnitude of the direct current to the one inverter exceeds a threshold value, the improvement comprising:

monitoring the operation of the one inverter to provide an indication of each commutation failure which it experiences;

monitoring the commutation voltage at the output of the one inverter;

opening the circuit breaker in response to appearance of such a commutation failure indication only when such indication occurs simultaneously with reduction of the commutation voltage below a rated value by more than a first predetermined magnitude such that proper operation of the one inverter is no longer assured; and

increasing the threshold value of the direct current from a normal value to a selected higher value in response to a reduction of the commutation voltage below the rated value by more than a second predetermined magnitude which is less than the first predetermined magnitude.

4,208,692

METHOD AND APPARATUS FOR DETECTING FAULT CURRENTS IN ELECTRICAL NETWORKS

André Rohr, Chatelaine, Switzerland, assignor to BBC Brown, Boveri & Cie., Baden, Switzerland

Filed Nov. 28, 1977, Ser. No. 855,345

Claims priority, application Switzerland, Dec. 2, 1976, 15175/76

Int. Cl.[2] H02H 3/08

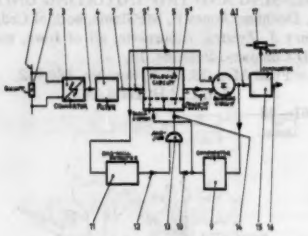
U.S. Cl. 361—87 9 Claims

1. A method of detecting fault currents especially short-circuits, in electrical loads, particularly at direct-current lines, comprising the steps of:

producing a current signal corresponding to the load current;

detecting the rise of the current signal;

forming a reference value by storing a value of the current signal which exceeds a predetermined rise during the detection step;



comparing the current signal with the reference value;

forming as a result of the comparison step a difference signal; and

using the difference signal as a triggering criterion for eliminating the fault current when the difference signal exceeds a threshold value.

4,208,693

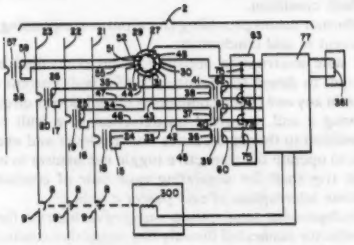
CIRCUIT BREAKER HAVING AN ELECTRONIC FAULT SENSING AND TRIP INITIATING UNIT

James W. Dickens, Marion; James P. McGinnis, Cedar Rapids, and Henry J. Zylstra, Alburnette, all of Iowa, assignors to Square D Company, Palatine, Ill.

Filed Mar. 15, 1978, Ser. No. 886,981

Int. Cl.[2] H02H 3/08

U.S. Cl. 361—94 3 Claims



1. A circuit protective device to detect fault current conditions in an electrical power circuit having a plurality of conductors carrying any one of a plurality of different normal currents and protect said power circuit against such fault current conditions, including:

separable contact means for each conductor,

circuit interruption means including a coil energized to operate said interruption means and separate said contact means to interrupt said power circuit on occurrence of a fault condition,

current responsive transformer means for each conductor with each transformer means including a current transformer having a respective step up transformer including a secondary developing a signal proportional to the current in the respective conductor,

ampere rating means including a plug carrying a plurality of resistors corresponding to a selected one of said normal currents optionally connected between the terminals of a

respective secondary and selected to control the respective step up transformer secondary to develop a first signal corresponding to a selected one of said normal currents and a respective other signal in response to a fault current condition corresponding to a respective fault current condition,

solid state means controlled by said other signal to energize said coil for operating said circuit interruption means to separate the contact means for each conductor and interrupt said power circuit in response to the control of said solid state means by a respective other signal,

interruption level adjustment means to select the signal level of each other signal applied to said solid state means to control said solid state means to energize said coil to interrupt said power circuit,

a common base carrying said conductors, circuit interruption means including said coil and said transformer means,

a cover engaged with said base in overlapping relationship to said conductors, said interruption means, and said transformer means, said cover carrying said solid state means, and said interruption level adjustment means,

means interconnecting said solid state means with said current responsive transformer means and said coil in response to the engagement of said cover with said base to enable said solid state means to energize said coil in response to a fault current in any of said conductors,

and a passage in said cover enabling the receipt of said plug to connect a respective one of said plurality of resistors to a respective step up transformer secondary with said cover engaged with said base,

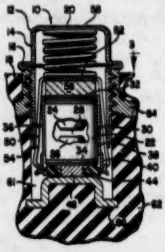
said interruption level adjustment means including a respective plurality of serially connected resistors selecting a respective level of said first signal and of each other signal from said transformer means controlling said solid state means to energize said coil, and a respective switch carried by said cover for each respective plurality of resistors with each switch manually movable with said cover engaged on said base to select the level of a respective first signal and one of said other signals effective to control said solid state means to energize said coil.

4,208,694

LINE PROTECTOR

Alexander G. Gliberts, Algonquin, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.

Filed Oct. 11, 1978, Ser. No. 950,422
Int. Cl.[2] H02H 3/22
U.S. Cl. 361—119 **6 Claims**



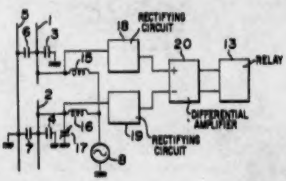
1. A line protector comprising a tubular cap, a metallic cage telescoped within the cap coaxial therewith and being axially slidable relative thereto, said cage comprising: an end wall and a series of axially extending circumferentially spaced fingers projecting from the periphery of said end wall, a sealed cold cathode gas tube having axially spaced electrodes separated by a dielectric tubular insulator and so jointed thereto as to form a sealed gas filled primary arc gap within the gas tube, said electrodes also having exposed conductive electrode flanges at the opposite ends of the tubular insulator, an electrically conductive tubular structure telescoped within said cage, said gas tube being telescoped within the tubular structure, one electrode flange being in electrically conductive connection with said tubular structure and with said cage, an end portion of said tubular structure and said other electrode flange being spaced to provide an annular secondary arc gap in electrical parallel with said primary arc gap, an insulator adjacent to said other electrode flange and projecting axially therebeyond, said insulator being surrounded by said end portion and having an outer wall portion that is greater in diameter than the outer diameter of said other electrode flange, said end portion being confined between said outer wall portion and said fingers such that said outer wall portion prevents radially inward movement of said end portion to prevent closing of said secondary arc gap, and a member in electrical contact with said other electrode flange and projecting through said insulator, the breakdown voltage across the secondary gap being less than the breakdown voltage across the primary arc gap if the gas tube seal fails and the primary arc gap becomes exposed to ambient atmosphere.

4,208,695

PROXIMITY DETECTOR

Masahiro Noda, and Ryoji Takahashi, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 24, 1978, Ser. No. 889,981
Claims priority, application Japan, Mar. 24, 1977, 52-32634
Int. Cl.[2] H03D 13/00; B66B 13/26
U.S. Cl. 361—181 **3 Claims**



1. A proximity detector comprising; a pair of antennae being disposed along the front edge of a door and at a space therebetween; a pair of coils constituting series resonance circuits, together with earth electrostatic capacities of said antennae which are connected in series with said coils; an AC power source for supplying voltages to said series resonance circuits; rectifying circuits for rectifying the voltages produced in said antennae by said AC power source; and differential amplifier circuit for amplifying difference between the outputs of said rectifying circuits, the output of said differential amplifier controlling the movement of said door.

4,208,696

ELECTRICALLY CONDUCTIVE WEB

Thomas W. Lindsay, Minneapolis, and Walter M. Westberg, Saint Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

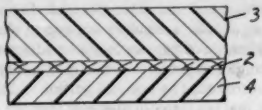
Continuation-in-part of Ser. No. 830,841, Sep. 6, 1977, abandoned. This application Jul. 19, 1978, Ser. No. 925,537
Int. Cl.[2] H05F 3/00
U.S. Cl. 361—212 **9 Claims**

1. A conductive web for discharging a static electric charge impressed thereon comprising:

a layer of semiconductive thermoplastic polymeric material with a volume resistivity between 1×10^{7} and 1×10^{12} ohm-cm, in direct physical and electrical connection with,

a foraminous layer, coated with carbon loaded resinous

material to impart a resistivity of between 10^3 ohms and 10^7 ohms, forming a completed conductive web and,



conductive means in electrical contact with said foraminous layer for connecting said foraminous layer to ground potential.

4,208,697

APPARATUS FOR CHARGING PHOTO-ELECTROSTATIC SEMICONDUCTOR LAYERS

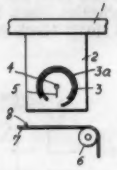
Henning Fischer, No. 18, Beymestrasse, 1000 Berlin 41, and Günter Leverentz, No. 12, Sanderstrasse, 1000 Berlin 44, both of Fed. Rep. of Germany

Filed Aug. 19, 1977, Ser. No. 826,103

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1976, 2639525

Int. Cl.[2] G03G *13/00, 15/00*

U.S. Cl. 361—229 **20 Claims**



1. An electrophotographic recording device comprising:

(a) means for feeding along a predetermined path paper having a photoconductive semiconductor layer;

(b) means for projecting a light image on said photoconductive semiconductor layer to form a latent image at a first station along said path; and

(c) corona discharge means for subjecting said photoconductive semiconductor layer including said latent image to a corona discharge field at a second station downstream of said first station along said path to form a latent charge image;

(d) said corona discharge means comprising a corona electrode, a voltage transformer for supplying current to said corona electrode, a casing enclosing said electrode, said casing comprising a first cylindrical tube having a slit opening in one side thereof for transmitting corona discharge from said electrode to said photoconductive semiconductor layer including said latent image and a second tube telescopically nested over said first tube and including a further slit opening therein, a housing enclosing said casing and electrode, said housing having an opening adjacent said paper for directing said corona discharge from said electrode to said photoconductive semiconductor layer including said latent image, and electrical means and mechanical means for varying the intensity of the corona discharge at the surface of said photoconductive semiconductor layer including said latent image, said mechanical means comprising means to rotate said first and second tubes relative to each other to vary the width of an opening formed by said slits through which said corona discharge is emitted;

(e) whereby the amount of charge applied to the exposed portion of said photoconductive semiconductor layer may be controlled.

4,208,698

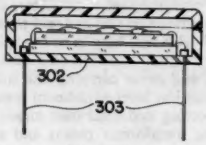
NOVEL HYBRID PACKAGING SCHEME FOR HIGH DENSITY COMPONENT CIRCUITS

Tanjore R. Narasimhan, Farmingville, N.Y., assignor to ILC Data Device Corporation, Bohemia, N.Y.

Filed Oct. 26, 1977, Ser. No. 845,567

Int. Cl.[2] H05K *5/00*

U.S. Cl. 361—414 **4 Claims**



1. A compact high density solid state electronics package comprised of integrated circuit components, and discrete impedance elements and their interconnections, said package comprising:

a first planar insulating substrate having at least a first printed wiring pattern formed upon one major surface of said first substrate and a plurality of thick film impedance elements deposited upon selected portions of said first substrate and overlying at least portions of said printed wiring pattern, said thick film impedance elements having been trimmed to provide the desired impedance values;

said first printed wiring pattern including a first set of connection terminals brought out to a position adjacent at least one border of said first substrate;

a second planar insulating substrate;

a second printed wiring pattern formed on one major surface of said second substrate;

an intermediate layer of insulation deposited upon at least portions of said second printed wiring pattern;

a third printed wiring pattern formed on said intermediate insulation layer;

each of said second and third printed wiring patterns including a plurality of thin film impedance elements deposited upon selected portions of their associated printed wiring patterns formed on said second substrate;

the tolerance ranges of the thin film impedance elements being substantially less than the tolerance ranges of said thick film impedance elements;

at least one integrated circuit member being adhesively joined upon the surface of said third printed wiring pattern, said second and third printed wiring patterns including a second set of connection terminals brought out to positions along one border of the major surface of said second substrate;

means for adhesively bonding said one major surface of said first substrate to the undersurface opposite said one major surface of said second substrate so as to substantially cover said first printed wiring pattern and said thick film impedance elements;

said border of said second substrate being positioned to expose said first set of connection terminals; and

means for electrically interconnecting terminals of said first connection terminal set to selected terminals of said second connection terminal set.

4,208,699

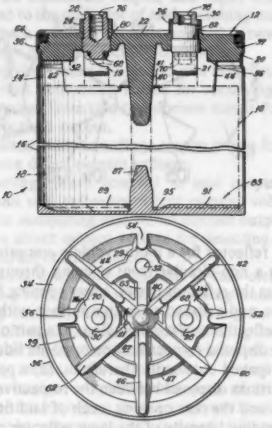
CAPACITOR WITH MOLDED HEADER INCLUDING STRENGTHENING MATERIAL

Conrad L. Philpott, Greenville, and Emil F. Blase, Pickens, both of S.C., assignors to Sangamo Weston, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 609,221, Sep. 2, 1975, abandoned. This application Oct. 17, 1977, Ser. No. 842,739

Int. Cl.[2] H01G 9/00; B01J 17/00; B01G 9/16

U.S. Cl. 361—433 8 Claims



1. An electrolytic capacitor comprising a casing having a closed bottom end and an open upper end; a capacitor section located within said casing having anode foils and cathode foils; porous separators for said foils; an electrolyte impregnating said foils including dimethyl formamide solvent; a header sealed to the open end of said casing and comprising molded plastic material characterized as being dimensionally stable and resistant to chemical attack by said dimethyl formamide at temperatures in excess of 85° C.; and including strengthening material selected from the group consisting of glass fibers and minerals; conductive retainer means at the bottom of said casing adapted to conduct heat from one of said foils to said casing; said header being formed to define further retainer means including a plurality of ribs extending radially of said header and depending downwardly therefrom into engagement with the upper end of the capacitor section, and a bolster ring extending about the lower surface of said header and integral with the distal ends of said ribs, said further retainer means inducing a force on said capacitor section to urge said capacitor section in pressure contact with said first retainer means, said first retainer means and said further retainer means cooperating to fix said capacitor section against horizontal, vertical and rotational movement.

4,208,700

FLASHBULB UNIT

Bauke J. Roelevink, and Johannes R. Gelens, both of Terneuzen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 28, 1978, Ser. No. 882,270

Claims priority, application Netherlands, Apr. 4, 1977, 7703634

Int. Cl.[2] G03B 15/02

U.S. Cl. 362—10 7 Claims

1. A flashbulb unit which comprises: a housing, a plate-shaped support disposed in said housing, an electrical circuit which is provided on said support which includes a plurality of flashbulbs and break switches and means for manually preventing electrical power from passing through each of said break switches which comprises a plurality of pushbuttons, each pushbutton cooperating with of one said break switches to

physically rupture the cooperating break switch when depressed.

4,208,701

LUMINOUS TOY

B. Dwain Schock, 15766 Via Colusa, San Lorenzo, Calif. 94580

Filed Mar. 10, 1978, Ser. No. 885,338

Int. Cl.[2] F21L 7/00

U.S. Cl. 362—202 5 Claims

1. A luminous toy comprising:

a light source;

an elongated hollow member having a translucent side wall connected at one end to said light source for transmission of light longitudinally through said member; and

an elongated sinuous strip of light-reflecting material mounted interiorly and longitudinally of said member and having at least one substantially complete and substantially wall-to-wall cyclic undulation whereby incident light rays from said source will be reflected at a multiplicity of angles through said side wall.

4,208,702

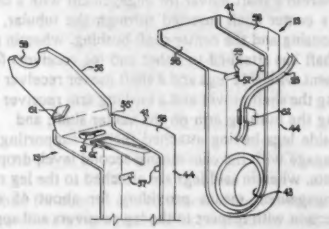
MOUNTING MEANS FOR LAMP FIXTURE

Joseph P. Wotowiec, Cuyahoga Falls, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 1, 1978, Ser. No. 956,862

Int. Cl.[2] F21V 21/00, 21/08; F21S 3/02; H01R 33/08

U.S. Cl. 362—217 7 Claims



1. A fluorescent lamp fixture having mounting means comprising at least one mounting bracket having a mounting portion adapted to be mounted against a mounting surface, a keyhole-shaped opening through said mounting portion for

fitting over a mounting screw or the like, said keyhole-shaped opening comprising a combination of a receiving opening for receiving the head of said mounting screw or the like and a slot for receiving the shank of said mounting screw or the like, said mounting bracket further comprising a cover hinged thereto and adapted to cover and conceal said mounting screw or the like, said cover being provided with a locking means which prevents dislodgment of said mounting bracket from said mounting screw or the like.

4,208,703

DEVICE HOLDER

Allie E. Orr, 4412 Culpepper Cir., Louisville, Ky. 40222

Filed Feb. 22, 1978, Ser. No. 879,851
Int. Cl.[2] A21V 33/00
U.S. Cl. 362—287 8 Claims

1. A device holder comprising:

(a) a barrel connected to the device on one end, and on the other end a tubular, split, shaft housing, said housing arranged generally perpendicular to the barrel and having on either end cam means arranged generally concentric with the tubular housing, said cam means providing in generally concentric fashion increased elevation toward each end respectively of the housing to a higher level of cam means;

(b) a bottom leg having a center shaft housing engaged concentrically with the split area of the tubular, split, shaft housing, and forming a bushing concentric with the center shaft housing and the tubular shaft housing, said bushing having a bushing arm forced into contact with the center shaft, providing increased friction against the rotation of the center shaft, and wherein said bushing has attached thereto a shaft mover for engagement with a center shaft;

(c) a center shaft inserted through the tubular, split shaft housing and the center shaft bushing, wherein said center shaft has attached to either end leg receivers for engagement with side legs and a shaft mover receiver for receiving the shaft mover and a bushing arm receiver for receiving the bushing arm on the center shaft; and

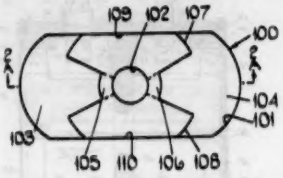
(d) side legs having attached thereto supporting arms that engage with the cam means, second level, drop point and gate, wherein said legs are attached to the leg receiver by engagement means providing for about 45 degrees of motion with respect to the leg receivers and spring means attached to the leg engagement means, said spring acting to keep the side legs forced toward the plane established by a center longitudinal line on the bottom leg as the bottom leg is rotated, and acting to keep the support arm in engagement with the cam means.

4,208,704

LAMP REFLECTOR FOR A MOTOR VEHICLE

Geoffrey R. Draper, Lichfield, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jun. 12, 1978, Ser. No. 914,658
Claims priority, application United Kingdom, Jun. 17, 1977, 25424/77
Int. Cl.[2] F21V 7/00; B60Q 1/00
U.S. Cl. 362—297 10 Claims



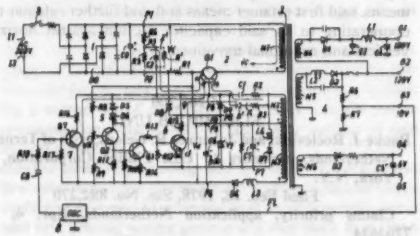
1. A lamp reflector for a motor vehicle comprising a dished body having a non-circular front opening through which, in use, light from the reflector passes, a rear opening for receiving a light source, and a dished reflective surface within the body, said dished reflective surface including (a) a pair of first reflective portions disposed respectively on opposite sides of the rear opening but spaced outwardly therefrom, (b) a pair of second reflective portions disposed between the respective first reflective portions and the rear opening, each of said first reflective portions extending laterally of the lamp reflector continuously from the respective second reflective portion to an outer edge of said dished reflective surface, and (c) a third reflective portion disposed above the rear opening between the first reflective portions, said third reflective portion extending from the rear opening to said outer edge of said dished reflective surface, and each of said second and third reflective portions having a focal length which is less than that of each of the first reflective portions.

4,208,705

SWITCHING REGULATED POWER SUPPLY APPARATUS

Nobukazu Hosoya, Higashiosaka, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Continuation of Ser. No. 750,710, Dec. 15, 1976, abandoned.
This application Jun. 30, 1978, Ser. No. 920,820
Claims priority, application Japan, Dec. 15, 1975, 50-149889; Dec. 17, 1975, 50-172310[U]
Int. Cl.[2] H02M 3/335
U.S. Cl. 363—19 6 Claims



1. A switching regulated power supply apparatus, comprising:

input rectifying means to be coupled to a commercial alternate current power supply for rectifying the commercial alternate current input to provide a rectified output;

direct current/alternate current coverting means coupled to said input rectifying means for repetitively on/off controlling said rectified output for providing an on/off controlled output, said direct current/alternate current converting means comprising blocking oscillator means having switching device means comprising a switching transistor for on/off controlling said rectified output and transformer means comprising an input winding, a feedback winding and a detection winding for transforming said on/off controlled output, said input winding being connected to the collector of said switching transistor, and the feedback winding being connected between the base and emitter of said switching transistor,

output rectifying means coupled to said direct current/alternate current converting means for rectifying said transformed output from said transformer means for providing a direct current output,

reference direct current voltage source means for providing a reference direct current voltage,

error detecting means coupled to said output rectifying means and said reference direct current voltage source means for comparing said direct current output with said reference direct cuttent voltage for detecting fluctuations of said direct current output,

control means operatively coupled to said error detecting means and to the base of said switching transistor of said blocking oscillator means for controlling the ratio of the on and off time periods of said switching transistor as a function of the fluctuation detected output from said error detecting means, said control means including a bypass transistor means coupled to the base of said switching transistor for bypassing the base current to said switching transistor in response to the output of said error detecting means, wherein the emitter of said bypass transistor means is coupled to a negative voltage from said transformer means; and

driver means operatively coupled to said switching transistor for on/off controlling said switching transistor at a predetermined time interval, said drive means including external synchronization oscillator means connected to be energized by said direct current output from said output rectifying means, said external synchronization oscillator means, and thereby said driver means controlling the on-time of said switching transistor,

said blocking oscillator means being self-oscillated upon connection of said input rectifying means to a commercial alternate current power supply, whereby said switching transistor on/off controls said rectified output from said input rectifying means, and said driver means is energized by said direct current output from said output rectifying means, whereupon said blocking oscillator means is operatively in synchronism with the output from said driver means.

4,208,706

SWITCHING REGULATOR

Tadao Suzuki, and Shigeaki A. Wachi, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 751,641, Dec. 17, 1976, Pat. No. 4,126,891. This application Aug. 23, 1978, Ser. No. 936,055

Claims priority, application Japan, Dec. 24, 1975, 50-1533457

Int. Cl.[2] H02M *3/335*

U.S. Cl. 363—26 **7 Claims**

1. A switching regulator comprising:

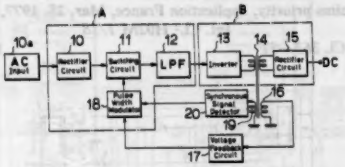
(a) a DC voltage source means;

(b) first switching means supplied with the output of said DC voltage source means and producing a first pulse signal;

(c) a pulse width modulator means for applying a pulse width modulation signal to said first switching means;

(d) a low pass filter means supplied with said first pulse signal and for producing a first DC voltage across first and second connection points;

(e) an inverter at least including a driving transformer having a primary winding, a pair of secondary windings, and a magnetic core, an output transformer having a primary winding, a secondary winding and a further separate winding, first and second transistors each having base, emitter and collector, the collector-emitter circuits of which are series connected together between the first and second connection points, a junction between the first and second transistors connecting to the primary winding of the output transformer, and the base-emitter circuits of which are connected across the corresponding secondary windings of said driving transformer, respectively, and the secondary winding of said output transformer producing a second pulse signal;



(f) first circuit means for connecting the further separate winding of said output transformer to the primary winding of said driving transformer so as to supply a feedback signal thereto;

(g) second circuit means for connecting the further separate winding of said output transformer to said pulse width modulator means so as to supply a synchronizing control signal thereto; and

(h) a rectifier circuit supplied with said second pulse signal and producing a second DC voltage.

4,208,707

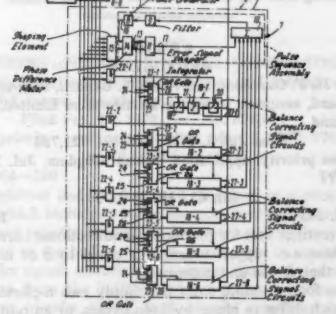
METHOD AND APPARATUS FOR CONTROL OF STATIC VALVE CONVERTER

Mikhail V. Olshvang; Grigory M. Tsfasman, both of Moscow, and Alexei A. Sheremet, Mytischi Moskovskoi, all of U.S.S.R., assignors to Vsesojuzny Elektrotekhnichesky Institut Imeni V. I. Lenina, Moscow, U.S.S.R.

Filed Jan. 24, 1978, Ser. No. 871,957

Int. Cl.[2] H02M *7/00*

U.S. Cl. 363—35 **10 Claims**



1. A method for control of a static valve converter, comprising the steps of: varying a phase of control pulses of static gap converter gates according to a control signal; forming an equidistant pulse sequence at a frequency equal to a conversion frequency; selecting an equidistant pulse sequence phase so that the mean phase difference value of the equidistant pulse sequence and respective pulses of all the valves is equal to a

constant value, not exceeding the interval between two successive control pulses; determining a pulse phase difference for each individual gate; converting the phase difference into a voltage; and correcting control phase angles of the respective valves proportionally with the resulting voltages so as to minimize said phase difference.

4,208,708

CURRENT LIMITING ARRANGEMENT FOR DC ELECTRICAL APPARATUS

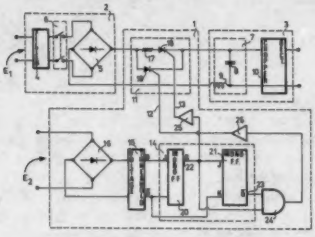
Jean-Jacques Abraham, Herblay, and Denis Pinson, Les Clayes ss Bois, both of France, assignors to Compagnie Internationale pour l'Informatique, Paris, France

Filed Mar. 23, 1978, Ser. No. 889,515

Claims priority, application France, Mar. 25, 1977, 77 09052

Int. Cl.² H02M *1/18*

U.S. Cl. 363—57 **13 Claims**



1. In an apparatus for supplying full current during steady state operation and very short duration breaks and for limiting current during transient operation in a DC electrical apparatus including rectifying and/or filtering circuits, the limiting apparatus having input and output terminals connected between an AC source feeding the DC apparatus and the rectifying and/or filtering circuits, a controller for limiting the current during transient operation comprising a threshold detector responsive to the amplitude of the AC source, timing means responsive to an output of the threshold detector, a switching circuit for controlling current flow between the AC source and DC apparatus, said switching circuit having control input means connected to be responsive to an output of the timing means, the timing means and threshold detector including means for actuating the switching circuit to limit any excess current in the electrical apparatus at the moment when the AC source comes on and for maintaining the switching circuit in full conducting state for the very short duration breaks.

4,208,709

RECTIFIERS

Martin H. F. Garnham, and Frank T. Bennell, both of London, England, assignors to Foster Transformers Limited, London, England

Filed Jul. 3, 1978, Ser. No. 921,732

Claims priority, application United Kingdom, Jul. 25, 1977, 31161/77

Int. Cl.² H02P *13/24*

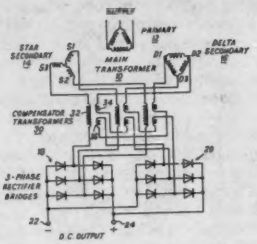
U.S. Cl. 363—90 **10 Claims**

1. A rectifier unit for producing unidirectional current from an n-phase a.c. supply, where n is equal to 3 or an integer greater than 3, the unit comprising:

means for providing from the supply two n-phase sources which differ in phase by 1/4n cycles, or an odd integral multiple thereof;

two n-phase bridge rectifiers having their inputs connected to receive the signals from the two sources and their outputs coupled together to provide the output of the unit; and

compensating means coupled between the sources and the rectifiers for modifying the signals applied to the latter, the compensating means comprising n transformer sections each coupled to at least one output of one of the sources and at least two outputs of the other source, and being arranged such that any difference in the current



drawn from one source, compared with the current with the same phase drawn from the other source, produces a compensating magnetic flux tending to equalize the current drawn from the two sources.

4,208,710

VOLTAGE REGULATING DEVICE FOR POWER GENERATING SYSTEM

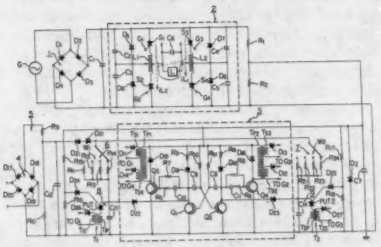
Kenji Hazumi, Sakato; Tsutomu Tanaka, Kasakake, and Katsutoshi Tagami, Asaka, all of Japan, assignors to Sawafuji Electric Co. Ltd. and Honda Giken Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed May 30, 1978, Ser. No. 910,231

Claims priority, application Japan, Jun. 17, 1977, 52-71691; Jun. 17, 1977, 52-71692

Int. Cl.² H02M *7/515*

U.S. Cl. 363—96 **5 Claims**



1. A voltage regulating device for power generating system having a generator; a rectifier for rectifying the output of the generator; an inverter circuit incorporating two sets of switching elements which are provided on the output side of the rectifier and alternately turned on and off; a load which is energized by the inverter circuit; and multivibrators for controlling the switching elements of the inverter circuit, characterized in that there are provided delay circuits for controlling a delay time in accordance with the load voltage; and at least one diode respectively connected between a multivibrator and a delay circuit such that the delay operation of said circuits begin at the point of time when said multivibrators respectively generate a trigger pulse; and said sets of switching elements of the inverter circuits are controlled by both trigger pulses from said multivibrators and trigger pulses from said delay circuit to make the supply voltage to the load constant by forcibly turning off each set of the switching elements by means of the trigger pulses from said delay circuits prior to their turning off by means of the trigger pulses from said multivibrator respectively during each half cycle of the supply voltage.

4,208,711

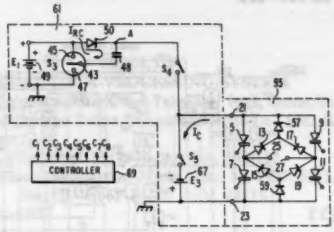
INVERTER WITH NATURALLY COMMUTATED MIXER

Richard H. Baker, Bedford, Mass., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 886,124, Mar. 13, 1978, abandoned. This application Dec. 22, 1978, Ser. No. 972,249

Int. Cl.² H02M 7/515, 1/06

U.S. Cl. 363—136 **12 Claims**



7. A system for inverting a first DC voltage into a dual polarity AC voltage comprising:

a mixer network including:

first and second input terminals, said second input terminal being connected to a point of reference potential; first and second output terminals for connection to a load; first and second thyristors having their anodes connected in common to said first input terminal, and their cathodes to said first and second output terminals, respectively; third and fourth thyristors having their anodes connected to said first and second output terminals, respectively, and their cathodes connected in common to said second input terminal; and a plurality of diodes, at least individual pairs of which are connected in a series circuit with one another and such series circuit in inverse parallel across the anode-cathode electrodes of said first through fourth thyristors, respectively;

means for level shifting said first DC voltage into a train of positive polarity stepped waveforms;

switching means receptive of said train of unipolarity stepped waveforms, and of a second DC voltage, said switching means being operable to a first condition for applying only said train of waveforms to said first input terminal, and to a second condition for applying only said second DC voltage to said first input terminal; and

controller means for operating said switching means to its first condition at the initiation of the period of occurrence of one of said stepped waveforms of said train of waveforms, concurrent with operating said first and fourth thyristors to their conductive states for applying current to said load in one direction, said controller means operating said switching means to its second condition at the end of the period of occurrence of the stepped waveform, whereby said plurality of diodes are forward-biased by said second DC voltage, and the resultant voltage drop across each pair of series connected diodes causes their respective thyristor to be reverse-biased, thereby turning off said first and fourth thyristors, said controller means thereafter operating said switching means to its first condition at the initiation of the next occurring stepped waveform, concurrent with operating said second and third thyristors to their conductive states for applying current to said load in the opposite direction, said controller means again operating said switching means to its second condition at the end of the period of occurrence of the associated stepped waveform, thereby reverse-biasing and turning off said second and third thyristors, said controller means repetitively operating said switching means and said first through fourth thyristors in the above manner for producing said dual polarity AC voltage across said load.

4,208,712

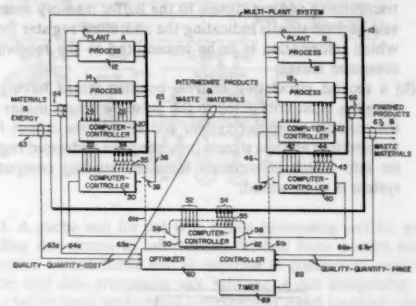
MULTI-UNIT OPTIMIZATION

Murray L. Deutsch, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 417,248, Dec. 9, 1964, abandoned. This application Nov. 2, 1970, Ser. No. 86,296

Int. Cl.² G06G 7/58; G06F 15/46; G05B 15/00

U.S. Cl. 364—105 **12 Claims**



1. The method of operating a system of multi-plants which produce finished products from material derived from a plurality of sources at fluctuating costs for delivery to markets of variable prices, each of said plants having a different, unique, cost function in producing the products, said method comprising operating computing apparatus to automatically perform the steps of:

(a) establishing optimized control points for process units in a first plant,

(b) substantially continuously feeding material and energy cost data, product price data, and variable process data to the optimized controls for said process units to maintain them at operating conditions dependent upon said data,

(c) periodically modifying cost and process data fed to the control for said first plant to set operating points for said process units in said first plant dependent upon optimum operation of said first plant, and

(d) periodically modifying cost and price data fed to the control for said system to set an operating point for said plant dependent upon optimum operation of said system.

4,208,713

ADDRESS AND BREAK SIGNAL GENERATOR

Ake K. Berg, Stockholm, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Feb. 15, 1978, Ser. No. 878,011

Claims priority, application Sweden, Mar. 1, 1977, 7702263

Int. Cl.² G06F 15/16

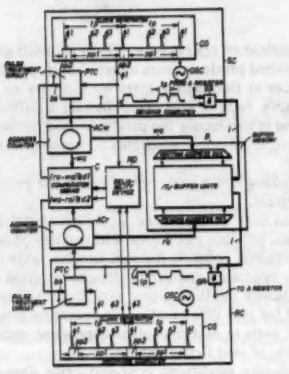
U.S. Cl. 364—200 **3 Claims**

1. An address and break signal generator in a processing complex which includes a buffer memory with a fixed number of addressed registers, a sending computer system for sending information to the buffer memory in response to an information transfer signal, a receiving computer system for receiving information from the buffer memory in the response to an information transfer signal, each of said computer systems having an oscillator, said oscillators having the same nominal frequency but not being mutually synchronized whereby they slip with respect to each other, each of said computer systems having a clock generator for generating a set of series of clock pulses, the clock pulses of each series having a given phase difference with respect to the clock pulses of the other series, the clock pulses of one of the series for each computer system

establishing the timing periods for that computer system, each timing period having a reliable part during which operations can be reliably performed and an unreliable part during which operations are unreliably performed, each of said computer system having a pulse treatment means receiving the break signals and the pulses from said one series which establishes the timing periods for generating information transfer signals only when a pulse from said one series occurs in the absence of a break signal, said address and break signal generator comprising:

(a) a first circulating address counter means having a stepping input connected to the pulse treatment means of the receiving computer system and an address output for transmitting address signals to the buffer memory means, said address signals indicating the addressed register from which information is to be transmitted to the receiving computer means;

(b) a second circulating address counter means having a stepping input connected to the pulse treatment means of the sending computer system and an address output for transmitting address signals indicating the addressed register into which information from the sending computer system is to be stored;



(c) a comparator means for comparing said address signals generated by said first and second address counter means, said comparator means including means for transmitting a break signal to the pulse treatment means of said receiving computer system when the difference between the values represented by said address signals is greater than a given value to inhibit the generation of an information transfer signal by said pulse treatment means and prevent the under-occupancy of the buffer memory means; and said comparator means including means for transmitting a break signal to the pulse treatment means of said sending computer system when the difference between the values represented by said address signals is greater than a given value to inhibit the generation of an information transfer signal by said pulse treatment means and prevent the over-occupancy of the buffer memory means;

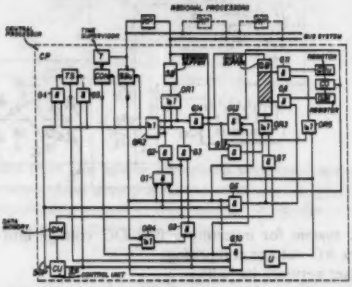
(d) reliability means including means performing phase comparisons between the timing periods of the computer systems for controlling said comparator means to transmit break signals only during reliable parts of the timing periods.

4,208,714

APPARATUS FOR GIVING PRIORITY TO CERTAIN DATA SIGNALS

Mats F. Eklund, Stockholm; Hans O. S. Kjøller, Västerhaninge, and Anders B. J. Nyman, Hägersten, all of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Feb. 21, 1978, Ser. No. 879,361
Claims priority, application Sweden, Feb. 28, 1977, 7702143
Int. Cl.[2] G06F 7/00, 13/00
U.S. Cl. 364—200 **1 Claim**



1. Computer system for transmitting information signals from a sender processor to one or several other receiving processors connected to the same bus system so that information signals having priority are transmitted without time delay and that the sequence of information signals without priority are not changed, each processor containing a data memory means for delivering all the signals and a control means for controlling the data memory means, said computer system comprising, in the sender processor;

a sender buffer means for sending all the information signals to the bus system;

a queue buffer means for storing a number of information signals without priority in a sending sequence;

a first means for producing an indicating signal from said sender buffer means, when said sender buffer means is occupied or not;

a second means for producing a congestion signal when congestion occurs in a receiving processor;

a third means for producing a priority state signal when the information signal in the sender buffer is a priority information signal;

a first control logic means, connected to the outputs of said first, second and third means, for producing a control signal when activated by the simultaneous reception of signals from said first, second and third means;

a control signal circuit means connected to the output of said first control logic means and having a first and second output for producing in time sequential signals when said control signal circuit means is activated by said first control logic means;

a first gate circuit means connected to said first output of said control signal circuit means for controlling the movement of the contents of said sender buffer means to said queue buffer means when activated by a signal from said first output of said control signal circuit means;

a second gate control means connected to said first output of said control signal circuit, for writing the contents of said sender buffer received via said first gate circuit means into the queue buffer means as first output signal of the queue;

a third gate circuit means connected to said second output of said control signal circuit means, when activated for feeding an information signal having priority to the sender buffer means; and

a control logic means, connected to said first and second means, for controlling the movement from said queue buffer means to said sender buffer means the information

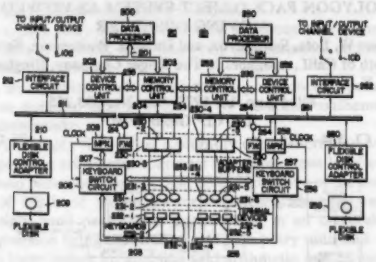
signal stored in said queue buffer means as first output signal of the queue.

4,208,715

DUAL DATA PROCESSING SYSTEM

Mitsuo Kumahara, Hamura, and Takatoshi Ishii, Oume, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 31, 1978, Ser. No. 892,127
Claims priority, application Japan, Mar. 31, 1977, 52/35470
Int. Cl.[2] G06F *11/06, 3/02, 15/16*
U.S. Cl. 364—200 2 Claims



1. In a data processing system including first and second data processing units having individual power source means associated therewith and a plurality of terminal devices adapted to be coupled to receive data from and transmit data to said first and second data processing units, configuration control means comprising, in combination:

first control means connected for channelling data to and from said first data processing unit;

second control means connected for channelling data to and from said second data processing unit;

adapter means associated with each said terminal device for supplying data thereto; and

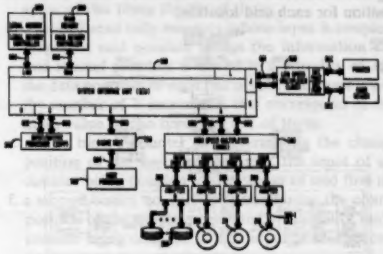
selector means for selectively coupling said adapter means to said first and second control means, said selector means including manually operable switch means for controlling said selector means to generate a first set of output signals, each said output signal designating a particular control means for connection to a particular adapter means, means responsive to said output signals to couple the designated control means and adapter means to channel data between said data processing units and said terminal devices, first logic switch means responsive to an error condition detected in one of said data processing units for overriding said manually operable switch means to cause said selector means to generate a second set of output signals designating the connection of all of said adapter means to the control means connected to the other of said data processing units, and second logic switch means responsive to a failure of one of said power source means for overriding said manually operable switch means and said first logic switch means to cause said selector means to generate a third set of output signals designating the connection of said adapter means in equal proportion to said first and second control means.

4,208,716

CACHE ARRANGEMENT FOR PERFORMING SIMULTANEOUS READ/WRITE OPERATIONS

Marion G. Porter; William A. Shelly, both of Phoenix, and Robert W. Norman, Jr., Glendale, all of Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 11, 1978, Ser. No. 968,521
Int. Cl.[2] G06F *13/00*
U.S. Cl. 364—200 39 Claims



1. A cache unit for use with a data processing unit for providing fast access to information fetched from a main store coupled to said cache unit in response to commands received from said data processing unit, said cache unit comprising:

a buffer store comprising a plurality of word locations energized into a plurality of levels for storing said information;

a plurality of address switch selection means corresponding in number to said plurality of levels, each said address switch selection means having a number of inputs connected to receive a corresponding number of addresses from a corresponding number of identical address sources and an output;

a plurality of address register means corresponding in number to said plurality of levels, each said address register means being coupled to a different one of said plurality of address switch selection means and to a different one of said plurality of said levels, each said address register means for storing the address specifying the word location to be accessed during a cache cycle of operation; and,

control circuit means coupled to each of said address switch selection means and to one of said address sources for receiving a set of level signals, said control circuit means for generating a plurality of sets of control signals identifying which one of said plurality of said address sources is connected to supply said address to be loaded into each of said address register means, said control circuit means being operative in response to said set of level signals to cause one of said plurality of sets of control signals to condition the address switch selection means designated by said set of level signals to select for loading into said address register means associated therewith an address from said one of said address sources and also to condition the remaining ones of said plurality of address switch selection means to select for loading into the remaining address register means an address from another one of said address sources enabling information to be written into said one level simultaneously with the accessing of information from the remaining levels during said cache cycle of operation.

4,208,717

PROGRAM STOP CONTROL OF TRAIN VEHICLES

Donald L. Rush, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

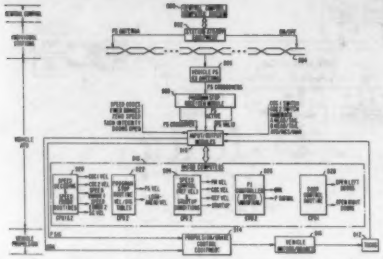
Filed Jun. 28, 1978, Ser. No. 920,318
Int. Cl.[2] B61L *3/22, 27/04*
U.S. Cl. 364—426 14 Claims

1. In apparatus for determining the program stop velocity of

a passenger vehicle moving along a track and in response to vehicle track provided control signals establishing successive actual locations of that vehicle moving along said track in relation to controlling the vehicle movement in relation to a desired stopping position in accordance with a provided distance versus velocity relationship, the combination of:

first means coupled with the vehicle for sensing the actual velocity of the vehicle,

second means including signal receiver apparatus and responsive to said control signal for determining the remaining travel distance for said vehicle to reach said desired position for each said location,



third means responsive to the actual velocity of the vehicle to provide for said vehicle a first desired program stop control velocity for said remaining travel distance in relation to the present time and in accordance with a first established desired relationship with that travel distance,

fourth means responsive to the actual velocity of the vehicle to provide for said vehicle a second desired program stop control velocity for said remaining travel distance in relation to a predetermined future time and in accordance with a second established desired relationship with that travel distance, and

fifth means controlling the velocity of said vehicle in response to each of said first and second program stop velocities.

4,208,718

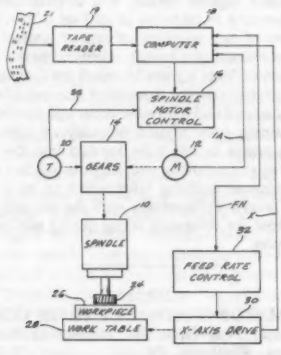
METHOD OF OPTIMIZING THE OPERATION OF A COMPUTER CONTROLLED MACHINE TOOL

Han-Chang Chung, West Allis, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Filed Jun. 5, 1978, Ser. No. 912,182

Int. Cl.[2] G05B *13/02*; G06F *15/46*; B23Q *15/00*

U.S. Cl. 364—474 **10 Claims**



1. A method of optimizing the cutting operation of a machine tool, which includes a motor driven rotary cutter carrying spindle that is adapted to be fed relative to a workpiece at varying rates for performing a cutting operation on the workpiece,

said method comprising the steps of:

(a) Selecting a programmed spindle speed for said spindle;

(b) Selecting a target horsepower for said cutting tool:

(c) Calculating a target excitation current for said spindle motor which will produce the selected horsepower at said cutting tool at the selected spindle speed;

(d) Measuring the actual excitation current of the spindle motor while said cutting tool is cutting said workpiece at a programmed feed rate;

(e) Calculating the feed rate change which is required to produce the target excitation current in the spindle motor;

(f) Changing said first feed rate by the amount calculated in step (e); and

(g) Periodically repeating steps (d) through (f) while said cutting tool is cutting said workpiece.

4,208,719

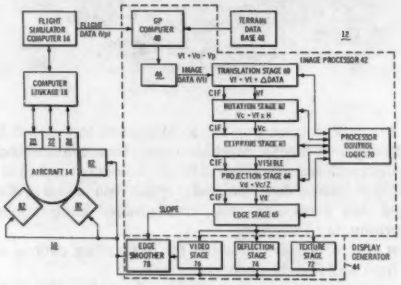
EDGE SMOOTHING FOR REAL-TIME SIMULATION OF A POLYGON FACE OBJECT SYSTEM AS VIEWED BY A MOVING OBSERVER

Robert W. Lotz, Santa Cruz, and David J. Westerman, San Jose, both of Calif., assignors to The Singer Company, Binghamton, N.Y.

Filed Aug. 10, 1978, Ser. No. 933,255

Int. Cl.[2] G09B *9/08*

U.S. Cl. 364—515 **25 Claims**



1. An image data system responsive to digital image data including position data which defines the position of the vertices of polygon faces forming the image, and visual data which defines the visual characteristics of each face, for providing edge smoothed digital display data to a raster type display device, comprising:

image processor means for receiving the image position data and providing display coordinates for each vertex of each polygon face;

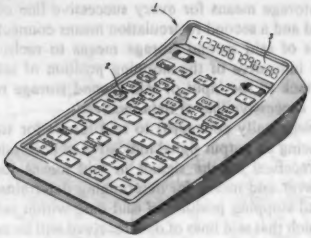
display generator responsive to the display coordinates for determining the leading and trailing intersections of each face with each scanline of the display raster, and responsive to the image visual data for providing a video signal to the display device along each scanline between the leading and trailing intersections of each face for generating the visual characteristics for that face on the display; and

edge smoothing means for decreasing the rate of change of the video signal in each scanline at the intersection of that scanline and at least one edge of each face, for causing a more gradual change of the visual characteristic prior to that intersection into the visual characteristic subsequent to that intersection by extending or contracting the intersection transient period.

4,208,720
CALCULATOR WITH ALGEBRAIC OPERATING SYSTEM

Herman W. Harrison, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 26, 1976, Ser. No. 708,958
Int. Cl.[2] G06F *7/38, 15/02*
U.S. Cl. 364—709 **10 Claims**

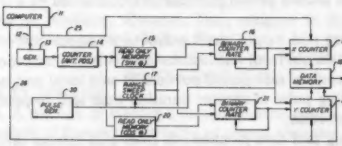


1. An electronic calculator comprising:
(a) a data entry unit for inputting algebraic expressions including numeric data, hierarchy mathematical commands and parentheses;
(b) an arithmetic unit for performing arithmetic operations on numeric data in response to hierarchy mathematical commands;
(c) a memory for storing a plurality of multi-bit data words, pending arithmetic operators and parenthesis level count, said parenthesis level count being indicative of the number of left-hand parentheses encountered less the number right-hand parentheses encountered in an algebraic expression being inputted at said data entry unit; and
(d) logic means for enabling said arithmetic unit to perform arithmetic operations on numeric data inputted at said data entry unit within a pair of parentheses according to the hierarchy mathematical commands inputted at said data entry unit with said numeric data, said logic means enabling said arithmetic unit to perform higher order hierarchy mathematical commands before lower order hierarchy mathematical commands inputted at said data entry unit within a pair of parentheses, and wherein said logic means selectively loads hierarchy mathematical commands and associated numeric data into said memory as pending arithmetic operators and multi-digit data words, respectively.

4,208,721
FAST-ρ θ RANDOM ACCESS MEMORY DEVICE

Robert M. Eisenberg, Woodbine, Md., assignor to The Singer Company, Binghamton, N.Y.

Filed Sep. 18, 1978, Ser. No. 943,435
Int. Cl.[2] G01S *7/44*
U.S. Cl. 364—731 **3 Claims**



1. A system for converting X, Y rectangular coordinate computer stored digital data into polar coordinate range (rho) and bearing (theta) radar and the like scans in simulated display radar and the like display systems; said system comprising of:
a. a digital computer for generating digital information regarding the antenna rotation rate of the simulated system and the X and Y position coordinates of the simulated vehicle;
b. a means for determining the present position or bearing of the simulated antenna; the input of said position means being coupled to one of the outputs of said digital computer;
c. a first read only memory whose input is coupled to the output of said position means; the information stored in said first memory is stored in a plurality of addresses the data contents of each one of said addresses are equal to the number of X increments that correspond to the maximum value of rho times the sin of theta;
d. a second read only memory whose input is coupled to the output of said position means the information stored in said second memory is stored in a plurality of addresses the data contents of each one of said addresses are equal to the number of Y increments that correspond to the maximum value of rho times the cos of theta;
e. a first binary counter for determining the change in X position of the simulated antenna, the input of said first counter being coupled to the output of said first memory;
f. a second binary counter for determining the change in Y position of the simulated antenna, the input of said second counter being coupled to the output of said second memory;
g. a third counter whose inputs are coupled to the output of said first binary counter and digital computer for determining the present X position of the simulated antenna;
h. a fourth counter whose input is coupled to the output of said second counter and digital computer for determining the present Y position of the simulated antenna;
i. a data memory whose input is coupled to the output of said third and fourth counters for storing the X and Y positions of the simulated radar and the like data;
j. a timing means coupled to said first counter, said second counter, said third counter and said fourth counter for maintaining said system in synchronization whereby upon the completion of a cycle of said timing means the output of said data memory will be a digital signal that represents the intensity of images that are drawn on said displays.

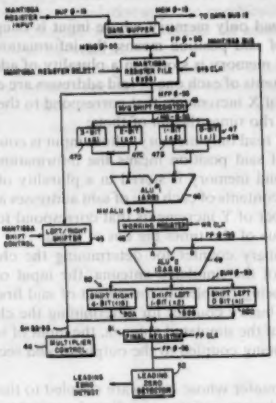
4,208,722
FLOATING POINT DATA PROCESSING SYSTEM

Edward J. Rasala, Westboro, Mass., and Charles J. Young, Wake Forest, N.C., assignors to Data General Corporation, Westboro, Mass.

Filed Jan. 23, 1978, Ser. No. 871,616
Int. Cl.[2] G06F *7/52*
U.S. Cl. 364—760 **9 Claims**

1. A digital data multiplier for providing the product of two values expressed in digital form comprising
means for providing a first digital data word representing a first of said two values;
means for providing a second digital data word representing a second of said two values;
means for providing successive groups of data bits of said second data word;
control logic means responsive to said successive groups of data bits for providing successive multiplier control signals;
shifter means for successively shifting the data bits of said first data word by a first selected number of positions to produce a first shifted data word and by a second selected number of positions to produce a second shifted data word, the selection of said first and second selected number of positions being successively controlled by said successive multiplier control signals;
first combining means responsive to said first and second shifted words for producing a single word which represents successive partial products of said first data word and said successive groups of bits of said second data word;
second combining means responsive to said successive par-

tial products for producing an intermediate product word which represents the sum of the successive partial products produced by said first combining means, said second



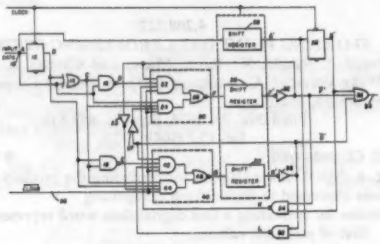
combining means providing a final intermediate product word which directly represents the final product of said two values.

4,208,723

DATA POINT CONNECTION CIRCUITRY FOR USE IN DISPLAY DEVICES

Thomas H. Lecklider, Bishop's Stortford, England, assignor to Gould Inc., Rolling Meadows, Ill.

Filed Nov. 28, 1977, Ser. No. 855,522
Int. Cl.[2] G06F *3/14*
U.S. Cl. 364—900 **6 Claims**



1. A system for interpolating data for use in a display device, said system comprising:

means for receiving a set of data comprising a plurality of lines of data one line at a time wherein a set of data can be a line of data;

means electrically connected to said receiving means for determining each starting and stopping position of said data within said line of data received, said means for determining further comprising a first means for producing a signal indicative of the starting position of said line of data and a second means for producing a signal indicative of the stopping position of said line of data;

means electrically connected to said means for determining having an input and an output for storing the signals produced by said means for determining wherein said means for storing further comprises a first storage means for storing the signal indicative of the starting position of said line of data and a second storage means for storing the signal indicative of the stopping position of said line of data;

means electrically connected to said means for storing for recirculating the signals in said means for storing wherein said means for recirculating further comprises a first recirculation means connected to the output of said first storage means to recirculate the signal indicative of the starting position of said line of data back to the input of said first storage means for every successive line of data received and a second recirculation means connected to the output of said second storage means to recirculate the signal indicative of the stopping position of said line of data back to the input of said second storage means for every successive line of data received;

means electrically connected to said means for storing for producing an output signal indicative of both said lines of data received on the signals in said means for storing whenever said means for determining determines a starting and stopping position of said data within said line of data such that said lines of data received will be connected by the signals indicative of the starting and stopping position of said lines of data; and

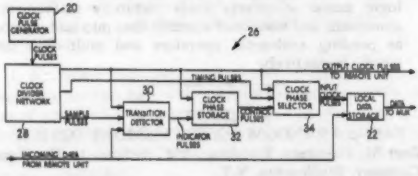
output means electrically connected between said means for producing and said display device for passing the produced signal to said display device whenever a signal is produced.

4,208,724

SYSTEM AND METHOD FOR CLOCKING DATA BETWEEN A REMOTE UNIT AND A LOCAL UNIT

Glen D. Rattlingourd, Salt Lake City, Utah, assignor to Sperry Corporation, New York, N.Y.

Filed Oct. 17, 1977, Ser. No. 842,639
Int. Cl.[2] G06F *1/04*; G11C *9/00*; H03K *5/13*; H04L *7/00*
U.S. Cl. 364—900 **11 Claims**



1. A method of clock phase adjustment in a data clocking system, comprising the steps of:

producing at a local unit output clock pulses each having first and second period portions interconnected by a transition;

transmitting said output clock pulses to a remote unit;

clocking data out from said remote unit with said transitions;

sampling each of said period portions at said local unit with a sampling pulse of shorter duration than said respective period portion;

transmitting said data clocked out from said remote unit to said local unit;

monitoring said clocked out data at said local unit for determining in which one of said sampled period portions a transition in said data occurs; and

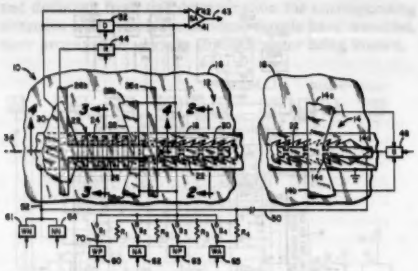
producing phase adjusted input clock pulses at said local unit during the sample pulse in the other of said period portions for clocking said data into said local unit.

4,208,725

MAGNETO-RESISTIVE DETECTOR FOR CROSS-TIE WALL MEMORY SYSTEM

Maynard C. Paul, Bloomington, and David S. Lo, Burnsville, both of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Feb. 23, 1979, Ser. No. 20,763
Int. Cl.[2] G11C *11/14*
U.S. Cl. 365—87 7 Claims



1. A detector for a cross-tie wall memory system comprising:

magnetic data track means whose two opposing edges are formed into repetitive patterns of successive narrow portions that form wide portions therebetween;

first and second electrically conductive detector elements spaced apart and along said data track means and electrically conductively affixed thereto for sandwiching a plurality of successive wide and narrow portions of said data track means therebetween;

a plurality of separate electrically conductive detector elements electrically conductively affixed to said data track means, each substantially centered within the successive wide portions of said data track means that are sandwiched between said first and second detector elements;

replicator means including an electrically conductive replicator stripline means aligned along said data track means for coupling a plurality of bipolar replicate drive fields to that portion of said data track means that is sandwiched between said first and second detector elements for replicating a cross-tie, if resident at said first detector electrode, in each of the sandwiched successive narrow portions of said data track means; and,

detector readout means coupling a read current drive signal across said first and second detector elements for generating a readout signal indicative of the presence or absence of said replicated cross-ties in said sandwiched successive narrow portions of said data track means.

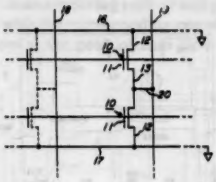
4,208,726

PROGRAMMING OF SEMICONDUCTOR READ ONLY MEMORY

David J. McElroy, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 12, 1978, Ser. No. 914,644
Int. Cl.[2] G11C *17/00*
U.S. Cl. 365—104 10 Claims

4. A method of making a semiconductor device comprising the steps of forming a plurality of circuit elements in a regular pattern on a face of a semiconductor body, each of the circuit elements having control electrodes at the face and conductive interconnection strips overlaying the electrodes; and programming the characteristics of the circuit elements by selectively forming thick insulating coating beneath control electrodes of selected ones of the circuit elements using a mask and forming thin insulation coating beneath the control electrodes of remaining ones of the circuit elements, and programming contacts from the conductive interconnection to the face of the body for said remaining ones of the circuit elements while



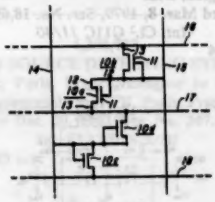
omitting such contacts for the selected ones of the circuit elements.

4,208,727

SEMICONDUCTOR READ ONLY MEMORY USING MOS DIODES

Donald J. Redwine, and G. R. Mohan Rao, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 15, 1978, Ser. No. 915,633
Int. Cl.[2] G11C *17/06*
U.S. Cl. 365—105 4 Claims



1. A semiconductor read only memory comprising an array of rows and columns of memory cells, each cell including an insulated gate field effect transistor having source and drain electrodes and a polycrystalline silicon gate electrode with a source-to-drain path between the source and drain electrodes, conductive means shorting the gate electrode of each transistor to one end of its source-to-drain path, elongated column lines each connected to the other end of the source-to-drain path of all of the transistors in a column, and elongated row lines in the form of metal strips each connected to said one end of the source-to-drain path of all of the transistors in a row, the memory cells being programmed to be either conductive or nonconducitve when a logic voltage is applied to the row lines, a segment of polycrystalline silicon forming the gate for each of two adjacent cells, the segment engaging the gate in both of the two adjacent cells, but the row line making only one connection to the segment.

4,208,728

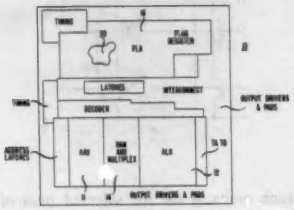
PROGRAMABLE LOGIC ARRAY

Donald E. Blahut, Holmdel, and James A. Cooper, Jr., Warren, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1978, Ser. No. 971,866
Int. Cl.[2] G11C *11/40*
U.S. Cl. 365—154 6 Claims

1. A semiconductor integrated circuit arrangement comprising a semiconductor chip having defined therein a first and a second portion, said first and second portions including word lines, said second portion including address lines, and a plurality of logic devices at selected crosspoints between said word lines and address lines of said first portion, CHARACTER-

IZED IN THAT ones of said word lines in said first portion are associated lines organized in groups of two or more, each



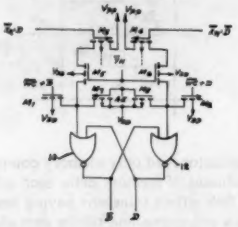
group being connected to a single one of said word lines in said second portion.

4,208,729

AUTOMATIC DATA RESTORE APPARATUS FOR MNOS TEMPORARY STORE MEMORY

David W. Williams, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 8, 1979, Ser. No. 18,697
Int. Cl.[2] G11C *11/40*
U.S. Cl. 365—184 **5 Claims**



1. An automatic data restore apparatus for a MNOS temporary store memory unit comprising in combination:

a first memory transistor to receive input data at its input, said first memory transistor temporarily holding said input data and then applying same to its output,

a second memory transistor to receive stored data at its input, said second memory transistor temporarily holding said stored data and then applying same to its output,

a first capacitor connected to said output of said first memory transistor, said first capacitor being variable, said first capacitor's capacitance being increased proportional to the input data,

a second capacitor connected to said output of said second memory transistor, said second capacitor being variable, said second capacitor's capacitance being increased proportional to said stored data, and,

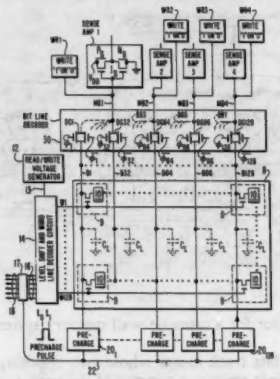
a detection unit connected to the outputs of said first and second memory transistor to receive input data and stored data, said detection unit comparing the outputs from said first and second memory transistor to determine a difference therebetween, said detection unit comparing said difference to a minimum level, said detector unit providing a command to write new data if said difference is below said minimum level which indicates that said stored data is not detected, said detector unit providing an inhibit command if said difference is above said minimum level which indicates that said stored data is detected.

4,208,730

PRECHARGE CIRCUIT FOR MEMORY ARRAY

Andrew G. F. Dingwall, Bridgewater, and Roger G. Stewart, Neshanic Station, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 7, 1978, Ser. No. 931,748
Int. Cl.[2] G11C *11/40*
U.S. Cl. 365—203 **14 Claims**



1. The combination comprising:

a memory array of cells arranged in M rows and N columns, each cell having a flip point (V_{FP}) defining a level above which the cell is set to or stores one binary condition and below which the cell is set to or stores the other binary condition;

N bit lines, a bit line per column of cells, all the cells of a column being coupled to a bit line;

N precharge means, each one of said precharge means being connected to a different one of said bit lines, each one of said precharge means being enabled prior to the writing of information into, or the reading of information out of any of said cells, for precharging its associated bit line to a potential approximately equal to the voltage of said flip point;

X master bit lines, where X is smaller than N;

a bit line decoder circuit coupled between said N bit lines and said X master bit lines for selectively coupling the signals on X of said N bit lines to respective ones of said X master bit lines; and

X sense amplifying means each one of said sense amplifying means being coupled to a different one of said X master bit lines.

4,208,731

METHOD AND DEVICE FOR DETERMINING THE GEOMETRICAL OUTLINE OF THE UNDERWATER PART OF ICEBERGS AND THE DRAUGHT THEREOF

Robert Desbrandes, Sevres, France, assignor to Institut Francais du Petrole, France

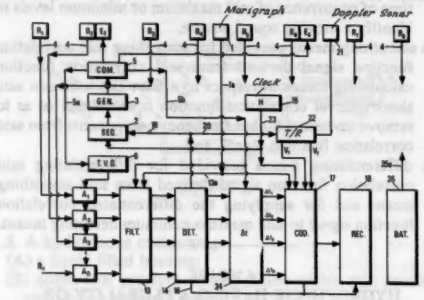
Filed Jan. 31, 1978, Ser. No. 873,874
Claims priority, application France, Feb. 2, 1977, 77 03101
Int. Cl.[2] G01S *9/66, 7/60*
U.S. Cl. 367—11 **8 Claims**

1. A method for determining the geometrical configuration of icebergs and the draught thereof comprising laying in a fixed underwater location at least one line of acoustic transducers comprising at least one element for transmitting acoustic signals towards the water surface, and a plurality of acoustic receivers, said line of transducers being substantially contained in the same vertical stationary reference plane, this method comprising the combination of the following steps:

(a) putting in energized condition this transducer line when an iceberg is approaching it,

(b) monitoring then at regular time intervals the transmission of acoustic signals from said transmission element, some of said signals being reflected by the underwater part of the iceberg and reaching the acoustic receivers,

(c) detecting said reflected signals, determining a set of values representing their propagation time between the transmitting element and at least some of the receivers of the line, located on both sides of said transmission element, and deducing from this determination the corresponding distances over which the acoustic signals have travelled, their propagation velocity through water being known,



(d) repeating steps (b) and (c) so as to obtain different sets of values corresponding respectively to different transmitted acoustic signals, said different sets of values characterizing respectively different positions of the iceberg as it moves through the vertical stationary reference plane, and determining among said different sets of values a series of values comprising the minimum minimorum value of said propagation times, said series of values corresponding substantially to the passage of the lowest point of the iceberg in said vertical reference plane, and

(e) deducing from said series of values of the propagation time, the geometrical configuration of the underwater part of the iceberg, in cross section by said vertical reference plane, and also the draught of the iceberg.

4,208,732

APPARATUS AND METHOD FOR ENHANCEMENT OF THE SIGNAL-TO-NOISE RATIO IN SEISMIC DATA

William H. Ruehle, Duncanville, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 399,666, Sep. 21, 1973, abandoned, which is a continuation of Ser. No. 252,443, May 11, 1972, abandoned. This application Feb. 11, 1976, Ser. No. 657,326

Int. Cl.[2] G01V *1/36*

U.S. Cl. 367—42 **12 Claims**

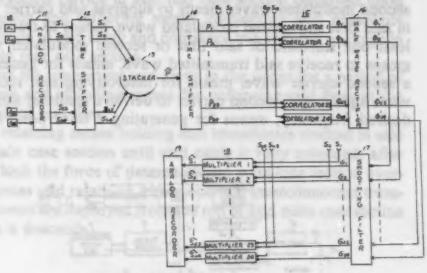
1. A system for enhancing primary seismic reflection signals recorded in the form of common depth point seismic traces, comprising:

(a) means for shifting each of said plurality of seismic traces along the time axis to compensate for time differentials in the occurrence of primary reflection signals between adjacent seismic traces caused by normal moveout,

(b) means for combining said plurality of seismic traces after correction for normal moveout to form a composite trace,

(c) means for generating from said composite trace a plurality of reference traces equal in number to the number of seismic traces, said composite trace being successively shifted along the time axis by the amounts of the time differentials caused by said normal moveout and recorded after each successive shift, thereby providing reference traces in which the primary reflection signals follow the same normal moveout that characterizes the seismic traces,

(d) means for crosscorrelating each of said plurality of reference traces with the corresponding one of said plurality of seismic traces at the point of zero time lag between the



traces to provide a plurality of correlation signals, one correlation signal for each of said plurality of seismic traces, and

(e) means for utilizing said correlation signals to enhance the common primary reflection signals of the corresponding seismic traces.

4,208,733

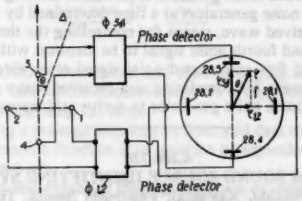
SOUND SOURCE DETECTING SYSTEMS

Francois Orieux, Paris, France, assignor to CSF-Compagnie Generale de Telegraphie sans Fil, Paris, France

Filed Dec. 20, 1962, Ser. No. 247,458

Int. Cl.[2] G01S *3/80*

U.S. Cl. 367—125 **5 Claims**



1. A system for detecting in bearing a source of sound in a predetermined plane and for measuring the frequency of said sound comprising in combination: two hydrophone dipoles substantially arranged in said plane, each having at least two hydrophones, the axis of said dipoles being at right angles to each other said hydrophones receiving said sound and providing output signals these hydrophones having respective axes perpendicular to said plane; means for detecting the respective phase shifts between said output signals of the same dipole and providing phase shift indicating signals; and display means having two inputs for receiving respectively said phase shift indicating signals.

4,208,734

UNDERWATER COMMUNICATION SYSTEM

Samuel M. Garber, Jr., Syracuse, and James H. Donegan, North Syracuse, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

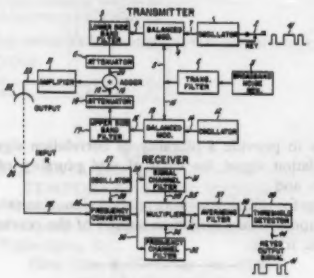
Filed Jan. 17, 1956, Ser. No. 559,566

Int. Cl.[2] H04B *11/00*

U.S. Cl. 367—134 **3 Claims**

1. In combination, means to generate a first noise signal having predetermined characteristics, means to generate a second noise signal have predetermined characteristics differ-

ent from that of said first noise signal, means to generate a carrier wave, means to generate a message signal, means to modulate said first noise signal with said carrier wave in the presence of said message signal to derive a first modulated wave, means to modulate said second noise signal with said carrier wave in the absence of said message signal to derive a second modulated wave, means to suppress said carrier wave in said first and second modulated wave, means to transmit at least one sideband of said first or second modulated wave, means to receive said transmitted wave, means for generating a second carrier wave, means for heterodying said received wave against said second carrier to derive a resultant signal of desired frequency, means for generating a third noise signal



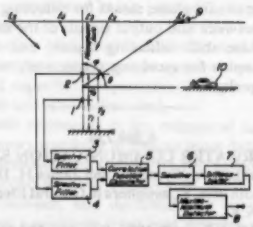
having the same amplitude characteristics as said first noise signal on a controllably variable time base, means for generating a fourth noise signal having the same amplitude characteristics as said second noise signal on a controllably variable time base, means for starting said third and fourth noise generators at the same point on the predetermined characteristic as the first and second noise generators, means for starting said third and fourth noise generators at a time determined by reception of said received wave, means for controlling the time base of said third and fourth noise signal to be identical with the time base of said first and second noise signal as received by the receiver, means for correlating said received wave with said third and fourth noise generator to derive said message signal.

4,208,735

MOVING SOUND SOURCE IDENTIFYING SYSTEM

Fumiyoshi Suzuki, Kawasaki; Fumiyoshi Sasaki, Tokyo, and Guèn Nishinomiya, Kawasaki, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

Filed Apr. 5, 1978, Ser. No. 893,821
Claims priority, application Japan, Apr. 15, 1977, 52-42710
Int. Cl.[2] H04B *1/06*
U.S. Cl. 367—136 **8 Claims**



1. A moving sound source identifying system comprising a plurality of sound receiving means arranged apart from each other on an axis crossing a moving direction of a moving sound source,

a plurality of filtering means provided for extracting respectively a plurality of sound signals in a predetermined frequency band which are respectively formed of sounds emitted from said moving sound source and received by said plurality of sound receiving means,

a correlation function calculating means provided for forming a cross correlation function signal representing a short interval cross correlation function relating to said plurality of received sound signals,

a maximo-minimum detecting means for detecting at least one of a maximum and minimum level of said correlation function signal, the time of occurrence of said maximum and minimum levels varying in accordance with the angle of elevation of said moving sound source,

an identifying means for discriminating the variations in the time of occurrence of said maximum or minimum levels to identify a moving sound source,

a smoothing means provided for smoothing said correlation function signal derived from said correlation function calculating means in respect to a time axis whereon said short interval correlation function is calculated so as to remove undesired higher frequency components from said correlation function signal, and

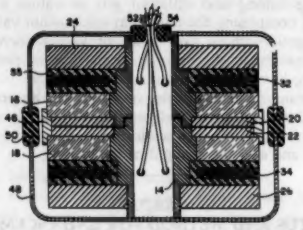
a differentiating means provided for differentiating said correlation function signal derived from said smoothing means and for supplying the differentiated correlation function signal to said maximo-minimum detecting means.

4,208,736

HYDROPHONE HAVING A PLURALITY OF DIRECTIONAL OUTPUTS

Jirair A. Babikyan, Woburn, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Feb. 16, 1971, Ser. No. 115,366
Int. Cl.[2] H04R *11/00*
U.S. Cl. 367—153 **14 Claims**



1. A directional hydrophone having a first and second coil assembly which interact with a substantially constant magnetic field in a magnetic circuit so as to produce electrical signals in response to external sound pressure waves, said electrical signals being a function of the direction of sound wave propagation whereby said signals will provide directional information when processed by signal processing equipment;

said magnetic circuit comprises at least a first and second magnet for providing said magnetic field with each of said magnets being positioned along a common axis, and in planes substantially perpendicular to said common axis, said magnetic field being substantially parallel to said common axis;

at least a first and second magnetic flux return path means positioned along said common axis, said magnets and said flux return means being arranged to provide first and second air gaps in said magnetic circuit, each of said first and second air gaps being in planes substantially perpendicular to said common axis; and

means for supportably mounting said first and second coil assemblies in said first and second air gaps respectively for motion in two directions in said magnetic field whereby an

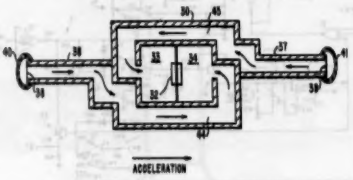
electrical signal is generated in each of said coil assemblies capable of being detected by said processing equipment.

4,208,737

LOW FREQUENCY INERTIA BALANCED DIPOLE HYDROPHONE

John H. Thompson, Severna Park, and George R. Douglas, Arnold, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 815,387, Jul. 13, 1977, abandoned. This application Dec. 6, 1978, Ser. No. 967,179
Int. Cl.[2] H04B 13/00
U.S. Cl. 367—171 16 Claims



1. A hydrophone comprising:
(A) a liquid filled housing;
(B) differential pressure sensing means within said housing and having a certain mass;
(C) liquid filled means in fluid communication with said sensing means for communicating the pressure at spaced apart locations to said sensing means; and
(D) said hydrophone being constructed and arranged that, when accelerated, the inertial response of said liquid on said sensing means is approximately equal and opposite to the inertial response of said sensing means due to said mass.

4,208,738

DEPLOYABLE SONAR ARRAY WITH INTERCONNECTED TRANSDUCERS OPERATED IN THE BENDING MODE

Omer E. Lamborn, Canoga Park, Calif., assignor to The Bendix Corporation, North Hollywood, Calif.

Filed May 1, 1978, Ser. No. 901,548
Int. Cl.[2] H04B 13/00
U.S. Cl. 367—173 6 Claims

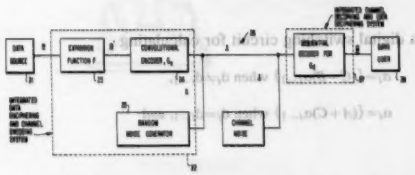
1. A sonar array adapted to be launched from a significant height above a body of water comprising an elongated housing of generally cylindrical configuration having a main case section and a separable rear case section, and a source of electrical power in said housing,
an array of disk-type sonar transducers operable in the bending mode stacked in said main case section including means electrically interconnecting said transducers and said source of electrical power and cable means mechanically connecting said transducers to each other and to said housing,
a shock-absorbing layer positioned between said transducers and the inside surface of said main case section,
a parachute device in said rear case section deployed upon launch and tethering means connecting said parachute device to said array and contained in a spin-out package in said rear case section,
a float for supporting said array in the water for a period of time and including means for collapsing said float at the end of said time,
and retaining means holding said transducers stacked in said main case section until said cable is fully extended, after which the force of descent of said main case section overcomes said retaining means and said interconnected transducers are deployed from the top of said main case section as it descends.

4,208,739

INTEGRATED ENCRYPTION AND CHANNEL CODING TECHNIQUE

Shyue-Ching Lu; Lin-nan Lee, both of Gaithersburg, and Russell J. F. Fang, Brookeville, all of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Jul. 20, 1978, Ser. No. 926,370
Int. Cl.[2] H04L 9/00
U.S. Cl. 375—2 10 Claims



1. A method of encryption and channel coding for reliable and secure data communication between a data source and a data user comprising the steps:
expanding a message sequence m from said data source with an expansion function F to produce an expanded message sequence m';
encoding said expanded message sequence m' using a convolutional code G_e of rate r_e exceeding a computational cutoff rate R_{comp}, resulting in an equivalent convolutional code G_d of rate r_d less than R_{comp}, where $G_d=FG_e$ to produce a cryptogram x;
transmitting the cryptogram x over a noisy channel characterized by the additive noise sequence e and having said computational cutoff rate R_{comp}, resulting in a corrupted version of the cryptogram y, where $y=x+e=m(FG_e)+e$; and
receiving said corrupted version of the cryptogram y and decoding the same with a sequential decoder which decodes said equivalent convolutional code G_d to produce a resultant message sequence m which is supplied to said data user.

4,208,740

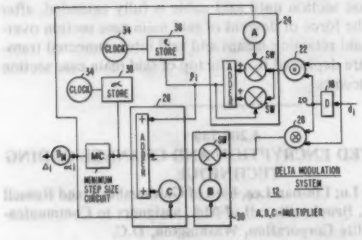
ADAPTIVE DELTA MODULATION SYSTEM

Huo-Bing Yin, Potomac, and Robert J. Hallett, Adelphi, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1978, Ser. No. 971,587
Int. Cl.[2] H03K 13/22
U.S. Cl. 375—30 6 Claims

1. In a delta modulation system including an analog input connected to a first input of an analog signal compare means whose output in turn is connected to a periodic sampling

means generating a delta modulated signal d_i at a sampling frequency which is provided to a system output and to the input of a companding means whose companded signal output α_i is connected through an integrating network means to a reconstructed analog signal input, wherein said companding means further comprises:



a digital switching circuit for calculating

$\alpha_i = \{(C-B)\alpha_{i-1}\}$ when $d_i \neq d_{i-1}$,

$\alpha_i = \{(A+C)\alpha_{i-1}\}$ when $d_i = d_{i-1}$, and

$$\alpha_i = \{(A+C)\alpha_{i-1}\} + A\left(\sum_{n=0}^{n=i-2} \alpha_n\right)$$

when $d_i = d_{i-1} = \ldots = d_0$ for $i > 2$

where

A, B, C are positive constants less than unity

$A+C >$ unity

$C-B <$ unity, and

α_i for $i=0$ is the minimum step size generated by said companding means;

whereby rapid adaptive digital companding of the delta modulation signal fed back via said integrating network to said compare means is achieved.

4,208,741

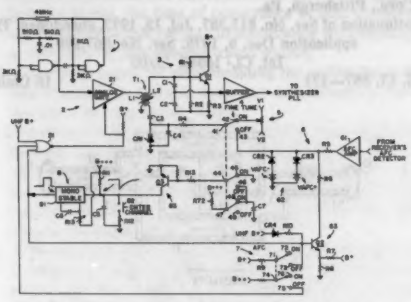
AFC SYSTEM FOR A SYNTHESIZER TUNING SYSTEM

Craig W. Brun, Honeoye Falls, and Wilfred L. Hand, Clarence, both of N.Y., assignors to GTE Products Corporation, Stamford, Conn.

Filed Nov. 2, 1978, Ser. No. 956,955

Int. Cl.[2] H03B 3/06; H04N 5/50

U.S. Cl. 455—180 **16 Claims**



1. An AFC system for a synthesizer-tuned television receiver comprising:

voltage-controllable reference oscillator; p1 voltage applying means coupled between the tuning control terminal of reference oscillator and between at least a first and a second source of tuning voltage, and a means for selecting the source of tuning voltage applied to the tuning control terminal;

a crystal-controlled oscillator;

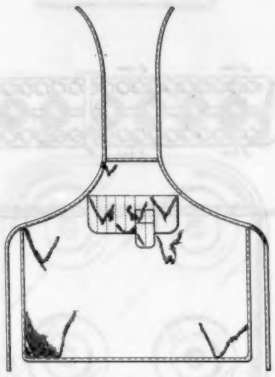
a control circuit having an input coupled to the crystal-controlled oscillator and an output coupled to the reference oscillator;

an AFC switch coupled to the control circuit, the AFC switch having an OFF condition and an ON condition whereby when the AFC switch is in the OFF condition the reference oscillator is continuously coupled by the control circuit to the crystal-controlled oscillator so that the reference oscillator is injection locked to the crystal-controlled oscillator and frequency of its output signal is equal to the frequency of the crystal-controlled oscillator; and

an acquisition delay circuit having an input coupled to the voltage applying means and an output coupled to the control circuit so that when a source of tuning voltage is selected the reference oscillator is, for a period of time determined by the acquisition delay circuit, injection locked to the crystal-controlled oscillator and subsequently controlled by the voltage applied to the tuning control terminal through the voltage applying means.

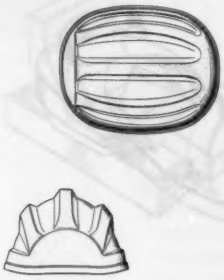
JUNE 17, 1980

255,392
SHOP APRON
Samuel Geffner, 1192 E. 12th St., Brooklyn, N.Y. 11230
Filed Jul. 7, 1978, Ser. No. 923,049
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—229

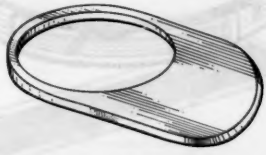


255,393
KARATE BOXING GLOVE
Sueo Sugibayashi, 40-14, Sendagi 3-chome, Bunkyo-ku, Tokyo, Japan
Filed Dec. 14, 1977, Ser. No. 861,029
Claims priority, application Japan, Jun. 17, 1977, 52-23502
Term of patent 14 years
Int. Cl. D02—*06*
U.S. Cl. D2—231

255,394
RIBBED HELMET
Otho F. McNabb, Long Beach, Calif., assignor to Bell Helmets, Inc., Norwalk, Calif.
Filed Apr. 11, 1978, Ser. No. 895,302
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—231



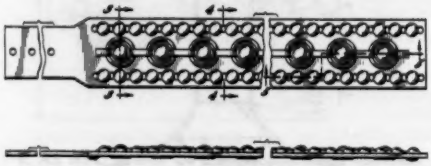
255,395
FLEXIBLE SUN VISOR
Donald R. Madison, 8801 Cottonwood, Santee, Calif. 92071
Filed Apr. 3, 1978, Ser. No. 893,123
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—247



255,396
COMBINED STRAPPING AND INSOLE FOR SANDALS
Myron G. Scheinhaus, North Hollywood, and Paul R. Jacobson, Sun Valley, both of Calif., assignors to Shine House, Inc., Los Angeles, Calif.
Filed Feb. 21, 1978, Ser. No. 879,814
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—326

255,397
BELT
Dennis K. Button, Denver, Colo., assignor to Para Band, Ltd., Englewood, Colo.
Filed Oct. 27, 1977, Ser. No. 846,264
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—380

255,398
BELT
William R. Terry, Rockford, Ill., assignor to William H. Williamson, Dixon, Ill.
Filed Apr. 24, 1978, Ser. No. 899,644
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—393

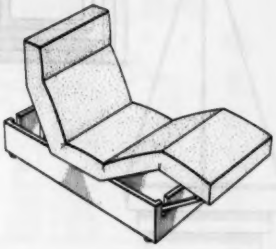


255,399
UMBRELLA SCABBARD
Edgar M. Loew, 344 Kenwood St., Englewood, N.J. 07631
Filed May 23, 1977, Ser. No. 799,741
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—11

255,400
TYPE ELEMENT STORAGE CONTAINER
Allan L. McCroskery, Weston, Conn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 13, 1978, Ser. No. 885,840
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—30

255,401
JEWELRY BOX
Cora L. Smith, 727 SW. 12th Ave., Portland, Oreg. 97205
Filed Jun. 14, 1978, Ser. No. 915,377
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—75

255,402
ADJUSTABLE BED
John C. Lundgren, Corona, Calif., assignor to Maxwell Products, Inc., Cerritos, Calif.
Filed Aug. 8, 1977, Ser. No. 822,885
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—79



255,403
ADJUSTABLE TOWEL BAR
Aldo Tonini, 278 Talbot St., London, Ontario, Canada (N6V 2H3)
Filed May 30, 1978, Ser. No. 911,059
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—99

255,404

COLLAPSIBLE HANGING BASKET

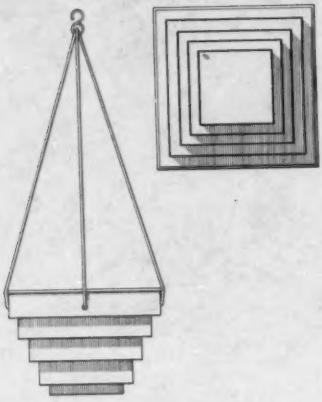
Walter H. Podjan, 1500 Rocky Gap, Benton Harbor, Mich. 49022

Filed Aug. 22, 1977, Ser. No. 826,889

Term of patent 7 years

Int. Cl. D6—*06;* D11—*02*

U.S. Cl. D6—113



255,405

SPORTS EQUIPMENT RACK

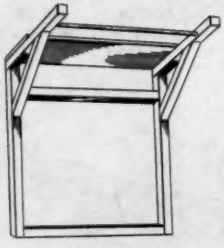
Bill De Villers, 5110 Jeanne D'Arc, Montreal, Quebec, Canada

Filed Sep. 1, 1978, Ser. No. 939,076

Term of patent 14 years

Int. Cl. D6—*04*

U.S. Cl. D6—132



255,406

CORNER GUN CABINET

E. W. Stephens, 1306 Mifflin St., Huntingdon, Pa. 16652

Filed Nov. 23, 1977, Ser. No. 854,364

Term of patent 14 years

Int. Cl. D6—*04*

U.S. Cl. D6—145

255,407

COMBINED DISPLAY CASE AND LIGHT FIXTURE THEREFOR

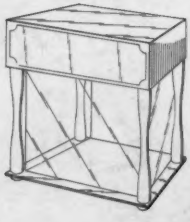
Frank W. Brittner, Pittsburgh, Pa., assignor to J & J Snack Food Corp., Pennsauken, N.J.

Filed May 11, 1978, Ser. No. 904,837

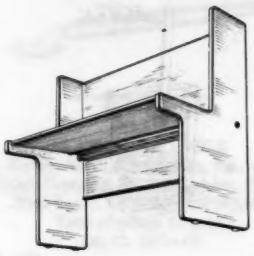
Term of patent 14 years

Int. Cl. D20—*02;* D11—*02*

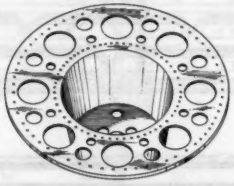
U.S. Cl. D6—172



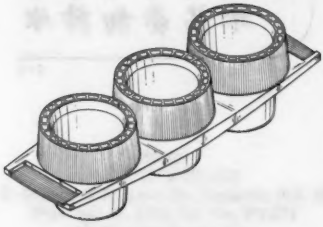
255,408
DESK
Robert T. Whalen, Toronto, Canada, assignor to Whalen Nesbitt Forde Ltd., Toronto, Canada
Filed Jan. 30, 1978, Ser. No. 873,455
Claims priority, application Canada, Sep. 16, 1977, 1609776
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—181



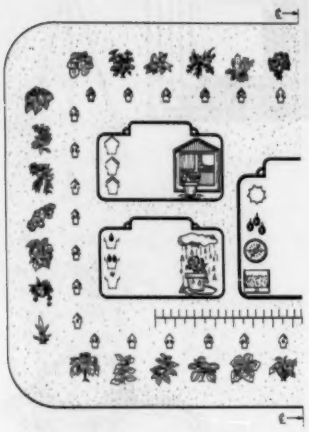
255,409
FLOWER POT HOLDER
Henry W. Volkmann, 3737 Seguin, Dallas, Tex. 75220, and Walter H. Volkmann, 4738 Denton Dr., Dallas, Tex. 75219
Filed Apr. 27, 1978, Ser. No. 901,020
Term of patent 14 years
Int. Cl. D6—*06;* D7—*01;* D11—*02*
U.S. Cl. D6—182



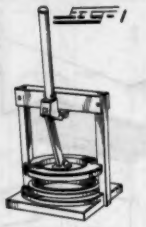
255,410
PLANTER OR THE LIKE
Thomas G. Petruzzi, Orlando, Fla.; Harold P. Ashton, Providence, R.I., and Rino Conti, Stoughton, Mass., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed May 3, 1979, Ser. No. 35,768
Term of patent 14 years
Int. Cl. D6—*06;* D11—*02*
U.S. Cl. D6—182



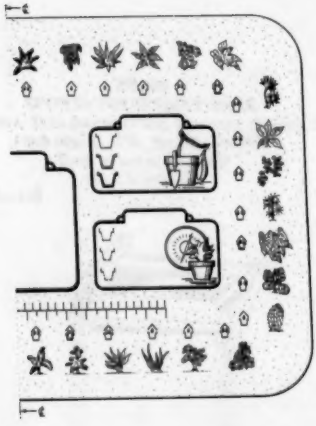
255,411
PROTECTIVE SHEET FOR HOUSE PLANT HUSBANDRY
James B. Swett, Altamonte Springs, Fla.; Robert F. Bateman, Greenville, and Ann K. Fritz, Woonsocket, both of R.I., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed May 10, 1978, Ser. No. 904,718
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—269



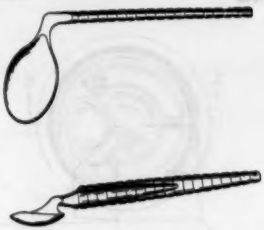
255,412
PIE CRUST MAKER, OR SIMILAR ARTICLE
Nicholas Bereza, 8233 W. Lawrence Ave., Norridge, Ill. 60656
Filed Jan. 23, 1978, Ser. No. 871,467
Term of patent 14 years
Int. Cl. D7—*04*; D15—*08*
U.S. Cl. D7—43



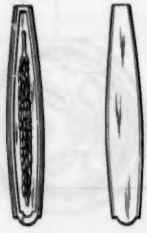
255,413
BROILER PAN INSERT
Fred D. Alexander, Arlington Heights, Ill., assignor to American Home Products Corporation, New York, N.Y.
Filed Dec. 20, 1977, Ser. No. 863,339
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—96



255,414
CHILD'S FEEDING SPOON OR THE LIKE
Robert A. Anson, 403 2nd Avenue Pl., Coralville, Iowa 52241
Filed Apr. 3, 1978, Ser. No. 893,166
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—141

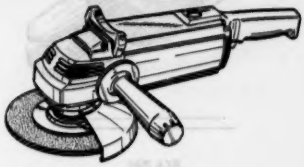


255,415
FLATWARE HANDLE
Sheldon M. Rutter, North Palm Beach, Fla., assignor to The Scott & Fetzer Company, Quikut Division, Fremont, Ohio
Filed Sep. 7, 1978, Ser. No. 940,487
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—152

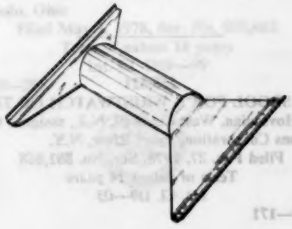


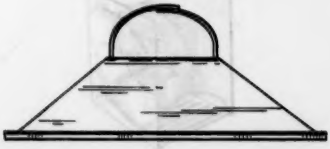
255,416
SEED DISPENSER
William A. Nicol, 65 Newtown Ave., Stratford, Conn. 06497
Filed Jul. 5, 1977, Ser. No. 813,120
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D8—2

255,417
PORTABLE ELECTRIC GRINDER
Masakazu Sakamoto, and Tetsuyuki Doi, both of Fukuyama, Japan, assignors to Ryobi Ltd., Fuchu, Japan
Filed Sep. 28, 1977, Ser. No. 837,056
Claims priority, application Japan, May 16, 1977, 52-18713
Term of patent 14 years
Int. Cl. D8—*02*
U.S. Cl. D8—62

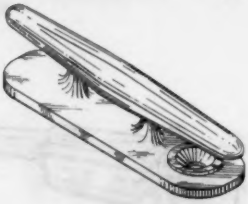


255,418
PAINTER'S GUARD
Thomas G. Sheluga, 2 Fountain Dr., Somerset, N.J. 08873
Filed Apr. 24, 1978, Ser. No. 899,371
Term of patent 14 years
Int. Cl. D08—*05*
U.S. Cl. D8—14



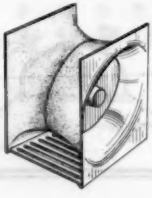


255,419
CLEAT FOR DECK LINE RETRIEVER
Clyde H. Hume, 21421 20th S., Seattle, Wash. 98188
Filed Jun. 15, 1977, Ser. No. 806,914
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382

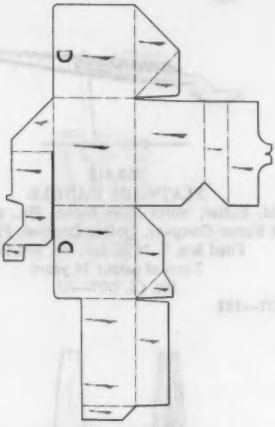


255,420
BOTTLE
Marc A. Rosen, Pelham Manor, N.Y., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed Oct. 11, 1977, Ser. No. 841,224
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—10

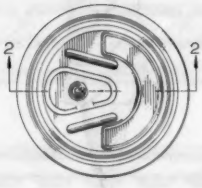
255,421
DISPLAY SPOOL FOR A WRISTWATCH OR THE LIKE
Charles J. Hovsepian, West Caldwell, N.J., assignor to Packaging Systems Corporation, Pearl River, N.Y.
Filed Feb. 27, 1978, Ser. No. 881,868
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—171



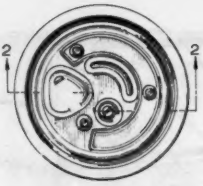
255,422
CARTON BLANK
Daniel P. Dutcher, Woodbury, Minn., assignor to Champion International Corporation, Stamford, Conn.
Filed Feb. 13, 1978, Ser. No. 877,416
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—245



255,423
END CLOSURE FOR A CONTAINER
Jess N. Bathurst, Hayward, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Filed Oct. 6, 1977, Ser. No. 839,944
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—253

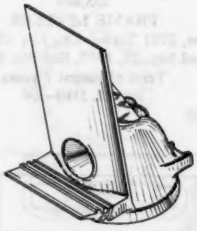


255,424
END CLOSURE FOR A CONTAINER
Jess N. Bathurst, Hayward, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Filed Oct. 6, 1977, Ser. No. 840,087
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—253



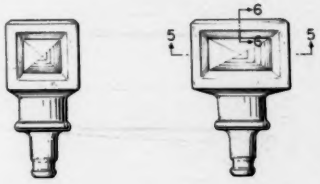
255,425
END CLOSURE FOR A CONTAINER
Jess N. Bathurst, Hayward, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Filed Oct. 6, 1977, Ser. No. 840,088
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—253

255,426
COMBINED CAP FOR A PRESSURIZED CAN, SQUEEGEE AND SCRAPER
George Kaufman, North Brunswick, N.J., and Willsey W. DuBois, New York, N.Y., assignors to Union Carbide Corporation, New York, N.Y.
Filed Dec. 19, 1977, Ser. No. 862,126
Term of patent 14 years
Int. Cl. D9—*07*; D7—*05*
U.S. Cl. D9—258



255,427
COMBINED BOTTLE CAP AND CAPSULE PIERCING DEVICE
Florence Borkan, South Orange, N.J., assignor to Pharmacaps, Inc., Elizabeth, N.J.
Filed Jun. 22, 1977, Ser. No. 808,885
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—261

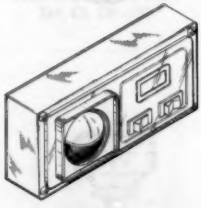
255,428
STOPPER
Edward J. Kretz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed May 1, 1978, Ser. No. 902,020
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—284



255,429
STOPPER
James E. Plummer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed May 1, 1978, Ser. No. 901,663
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—285

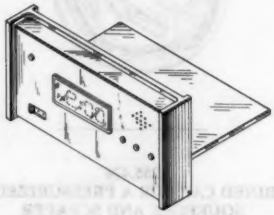
255,430
STOPPER
Gordon A. Strand, Waterville, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed May 1, 1978, Ser. No. 901,960
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—285

255,431
COMBINED COMPASS AND DIGITAL CLOCK
John J. Marmorale, 10811 Dorothy Ave., Garden Grove, Calif. 92643
Filed Oct. 31, 1977, Ser. No. 846,885
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—2



255,432
DIGITAL CLOCK
Nick Talesfore, Santa Clara, Calif., assignor to Fairchild Camera and Instrument Corp., Mountain View, Calif.
Filed Sep. 22, 1977, Ser. No. 835,836
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15

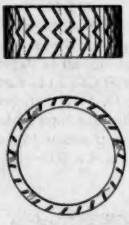
255,433
TRAVEL ALARM CLOCK
Jack G. Anderson, Avon, Conn., and Thomas V. Guerriere, Lake Grove, N.Y., assignors to ILC Data Device Corporation, Bohemia, N.Y.
Filed Dec. 12, 1977, Ser. No. 859,935
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



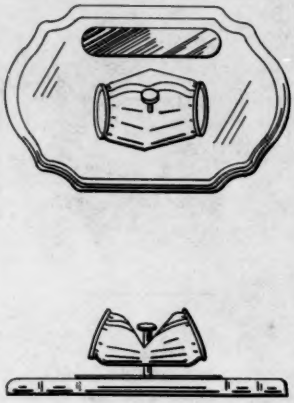
255,434
FRAME LEVELER
Larry K. Hanson, 2731 Tucker La., Los Alamitos, Calif. 90720
Filed Sep. 23, 1977, Ser. No. 836,041
Term of patent 7 years
Int. Cl. D10—*04*
U.S. Cl. D10—69

255,435
CLOCK DIAL
Alfred P. Mendoza, 1618 S. Ridgeley Dr., Los Angeles, Calif. 90019
Filed May 11, 1978, Ser. No. 905,108
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—125

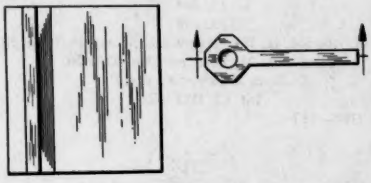
255,436
FINGER RING
Max Bogner, 427 Ft. Washington Ave., New York, N.Y. 10033, and Larry Grun, 6411 99th St., Rego Park, N.Y. 11374
Filed Mar. 17, 1978, Ser. No. 887,993
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—38



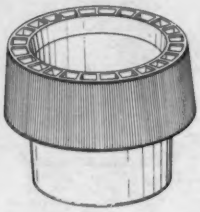
255,437
PLAQUE
Charles H. Allgood, II, 3886 Healy Rd., Memphis, Tenn. 38111
Filed Aug. 24, 1978, Ser. No. 936,681
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—133



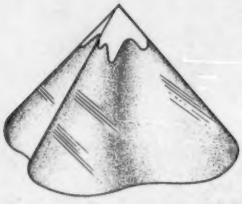
255,438
BUD VASE
Alwin J. Stahel, II, St. Paul, Minn., assignor to Ball Corporation, Muncie, Ind.
Filed May 2, 1979, Ser. No. 35,295
Term of patent 14 years
Int. Cl. D11—*02*; D19—*06*
U.S. Cl. D11—146



255,439
PLANT RECEPTACLE OR THE LIKE
Harold P. Ashton, Providence, R.I., and Rino Conti, Stoughton, Mass., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed May 3, 1979, Ser. No. 35,767
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—152

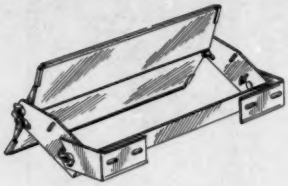


255,440
SCULPTURE
Dean T. Treworgy, 247 Elizabeth St. - Apt. C, New York, N.Y. 10012
Filed Jul. 19, 1978, Ser. No. 926,109
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—157

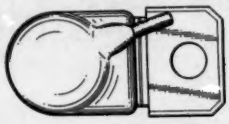


255,441
TROPHY
Charles H. Allgood, II, 3886 Healy Rd., Memphis, Tenn. 38111
Filed Aug. 24, 1978, Ser. No. 936,650
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—157

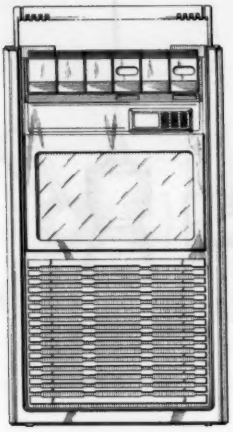
255,442
COMBINED MIRROR AND MOUNTING BRACKET
Arnold H. Dillemuth, 4680 Norma Dr., San Diego, Calif. 92115
Filed Jun. 29, 1978, Ser. No. 920,642
Term of patent 7 years
Int. Cl. D12—*16*
U.S. Cl. D12—187



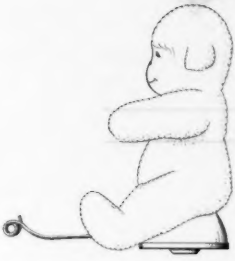
255,443
SURGE ABSORBER
Noboru Yoshida, Neyagawa; Hiroshi Oda, Hirakata, and Takeshi Hosokawa, Kanawishi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Sep. 15, 1978, Ser. No. 942,720
Claims priority, application Japan, Mar. 17, 1978, 53/10484
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D13—11



255,444
COMBINED TAPE RECORDER AND PLAYER OR SIMILAR ARTICLE
John T. Houlihan, Fayetteville, N.Y., assignor to General Electric Company
Filed May 5, 1978, Ser. No. 903,392
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—6



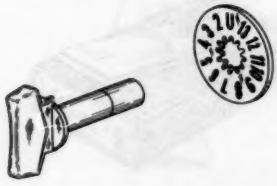
255,445
TELEPHONE
Steven E. Ahrens, 7612 Erica La., Laurel, Md. 20810
Filed Feb. 21, 1978, Ser. No. 879,621
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



255,446
RADIO RECEIVER
Keisuke Iwata, Tokyo, Japan, assignor to Iwata Electric Co., Ltd., Tokyo, Japan
Filed Apr. 3, 1978, Ser. No. 893,151
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68

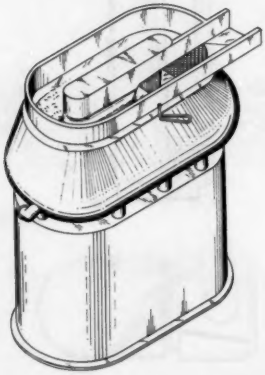
255,447
TELEVISION MONITOR
Roland Dahlström, Alingsas, Sweden, assignor to Aktiebolaget Svenska Kullagerfabriken, Gothenburg, Sweden
Filed Nov. 22, 1976, Ser. No. 744,651
Claims priority, application Sweden, May 20, 1976, 761097
Term of patent 7 years
Int. Cl. D14—*03*
U.S. Cl. D14—82

255,448
TELEVISION CHANNEL SELECTOR KNOB
Jules Gettman, 34 Robbins La., Westbury, N.Y. 11590
Filed May 12, 1978, Ser. No. 905,204
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—84



255,449
MOBILE ANTENNA
James P. Liautaud, Cary, Ill., assignor to American Antenna Corporation, Elgin, Ill.
Filed Dec. 13, 1977, Ser. No. 860,231
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—86

255,450
HOUSING FOR VIBRATION-ABRASIVE SURFACE FINISHING MACHINES
Carl K. Walther, Wuppertal; Henning D. Walther, Haan; Hubert P. Hagelüken, Düsseldorf, and Karl Teme, Wuppertal, all of Fed. Rep. of Germany, assignors to Carl Kurt Walther GmbH & Co. KG, Wuppertal, Fed. Rep. of Germany
Filed Oct. 20, 1977, Ser. No. 843,897
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1977, 5413982
Term of patent 14 years
Int. Cl. D15—*04, 09*
U.S. Cl. D15—124

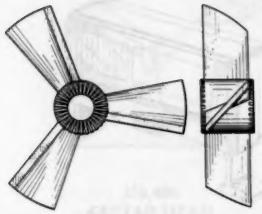


255,451

BLADE FOR MIXING LIQUIDS IN A CONDUIT

Norman R. Herbst; Ronald N. Salzman, both of Rochester; William F. Hutchings, Fairport, and William J. Montagno, Rochester, all of N.Y., assignors to General Signal Corporation, Stamford, Conn.

Filed Dec. 12, 1977, Ser. No. 859,353
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—138



255,452

TOOLCHANGER ARM

Tadeusz W. Piotrowski, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

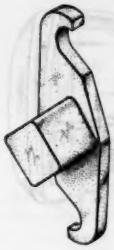
Filed Aug. 22, 1977, Ser. No. 826,777
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—140

255,453

TOOLCHANGER ARM

Tadeusz W. Piotrowski, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Aug. 22, 1977, Ser. No. 826,779
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—140

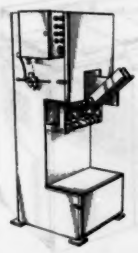


255,454

AUTOMATIC SEALING MACHINE

Gerald D. Westlund, 6684 Central Ave. Northeast, Minneapolis, Minn. 55432

Filed Oct. 25, 1978, Ser. No. 954,568
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—146



255,455

OPAQUE READER

Karl H. Gensike, Northridge, and John E. Davis, Sun Valley, both of Calif., assignors to Photomatrix Corporation, Santa Monica, Calif.

Filed Feb. 10, 1978, Ser. No. 877,010

Term of patent 14 years

Int. Cl. D16—*03*

U.S. Cl. D16—14

255,456

ELECTROPHOTOGRAPHIC APPARATUS OR THE LIKE

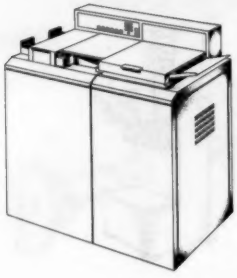
Ernest M. Bevilacqua, Wilton; Allen D. Hawthorne, and Eliot F. Noyes, both of New Canaan, all of Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 663,658, Mar. 4, 1976, abandoned. This application Jun. 26, 1978, Ser. No. 919,523

Term of patent 14 years

Int. Cl. D16—*03*

U.S. Cl. D16—30



255,457

PHOTOGRAPHIC STROBE-LIGHT OR SIMILAR ARTICLE

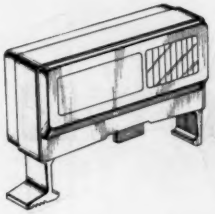
James M. Conner, Harrison, N.Y., and David E. Van Allen, Malden, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 8, 1978, Ser. No. 884,713

Term of patent 14 years

Int. Cl. D16—*05*

U.S. Cl. D16—42



255,458

PHOTOGRAPHIC STROBE-LIGHT OR SIMILAR ARTICLE

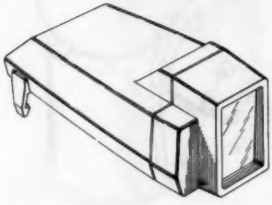
James M. Conner, Harrison, N.Y., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 8, 1978, Ser. No. 884,715

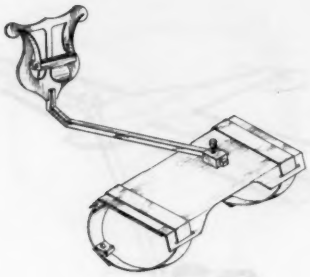
Term of patent 14 years

Int. Cl. D16—*05*

U.S. Cl. D16—42



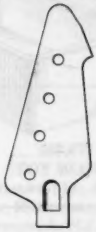
255,459
WRIST-MOUNTED FLUTIST'S LYRE
James T. Corder, 2403 Gladstone Dr., Huntsville, Ala. 35811
Filed Sep. 9, 1977, Ser. No. 832,084
Term of patent 14 years
Int. Cl. D17—*02*
U.S. Cl. D17—13



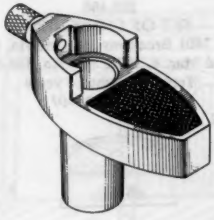
255,460
GUITAR HEAD
Charles H. Todd, III, Meridian, Miss., assignor to Hartley D. Peavey, Meridian, Miss.
Filed Jun. 22, 1977, Ser. No. 808,789
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—20

255,461
GUITAR HEAD
Charles H. Todd, III, Meridian, Miss., assignor to Hartley D. Peavey, Meridian, Miss.
Filed Jun. 22, 1977, Ser. No. 808,791
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—20

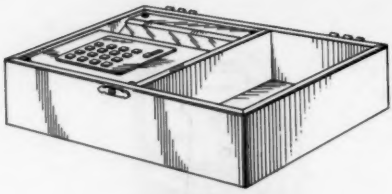
255,462
GUITAR HEAD
Charles H. Todd, III, Meridian, Miss., assignor to Hartley D. Peavey, Meridian, Miss.
Filed Jun. 22, 1977, Ser. No. 808,792
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—20



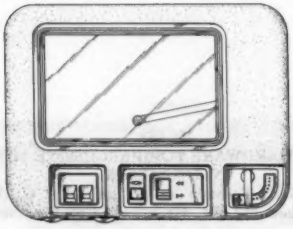
255,463
RECEIVER HARDWARE FOR PERCUSSIVE MUSICAL INSTRUMENTS
Forrest W. Clark, Fountain Valley, and David G. Donohoe, Lakewood, both of Calif., assignors to CBS Inc., New York, N.Y.
Division of Ser. No. 672,522, Mar. 31, 1976, which is a continuation-in-part of Ser. No. 553,605, Feb. 27, 1975, abandoned. This application Feb. 21, 1978, Ser. No. 879,792
Term of patent 14 years
Int. Cl. D17—*04*
U.S. Cl. D17—22



255,464
ELECTRONIC CHESS GAME BOARD
Rod Barclay, Dallas County; John A. Cunningham, Lubbock County; Alan B. Mead, and Joseph T. Spaits, both of Collin County, all of Tex., assignors to Applied Concepts, Inc., Garland, Tex.
Filed Mar. 2, 1978, Ser. No. 883,035
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13

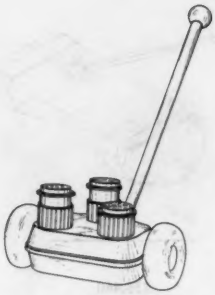


255,465
GOLF GAME CASING
Hitoshi Itakura, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jul. 25, 1978, Ser. No. 928,006
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—27



255,466
SET OF CHESSMEN
Henry Kozerski, 7401 Brockway Rd., Melvin, Mich. 48454
Filed Mar. 6, 1978, Ser. No. 884,046
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—52

255,467
ACTION TOY
Ralph W. Crawford, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 9, 1977, Ser. No. 859,119
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—59



255,468
SIMULATIVE STILT
Robert Ricca, San Jose; Frank Ricca, and James R. Dupzyk, both of Fresno, all of Calif., assignors to Frantic Feet Toy, Company, San Jose, Calif.
Filed Jun. 24, 1977, Ser. No. 809,787
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—72

255,469

KITE OR SIMILAR ARTICLE

Waclaw Deptula, North Haven, Conn., assignor to D & R Enterprises, Inc., New Haven, Conn.

Continuation of Ser. No. 634,655, Nov. 24, 1975, abandoned.

This application Apr. 28, 1978, Ser. No. 900,930

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D21—88

255,470

SIMULATIVE TOY TOP

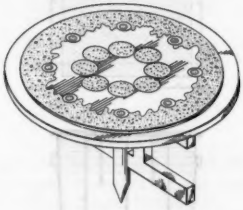
Ray W. Johnson, 2726 Mason Ter., Wichita, Kans. 67216

Filed Mar. 8, 1978, Ser. No. 884,718

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D21—96



255,471

TOY CONSTRUCTION PIECE

Stephen J. Loechel, Adelaide, Australia, assignor to Motley Manufacturing Agencies Pty. Ltd., Adelaide, Australia

Filed Sep. 16, 1977, Ser. No. 834,145

Claims priority, application Australia, Mar. 16, 1977, 71402

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D21—108

255,472

JOINT ELEMENT FOR CONSTRUCTION SET

Richard J. Gabriel, Beaverton, Oreg., assignor to Matrix Toys, Inc., Portland, Oreg.

Filed Jan. 9, 1978, Ser. No. 868,283

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D21—108

255,473

TOY BLOCK

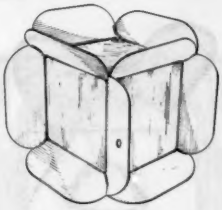
Richard A. Chase, Baltimore, Md.; Jacob Van Dyke, Frontenac, Mo., and Franz Duy, Richardson, Tex., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Mar. 7, 1978, Ser. No. 884,346

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D21—108



255,474

TOY RAMP

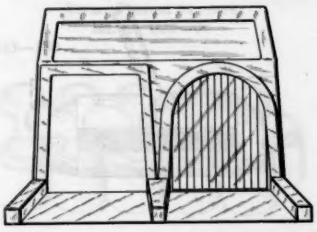
Michael I. Satten, Great Neck Estates, N.Y., assignor to CBS Inc., New York, N.Y.

Filed Dec. 27, 1977, Ser. No. 864,645

Term of patent 14 years

Int. Cl. D21—*01*

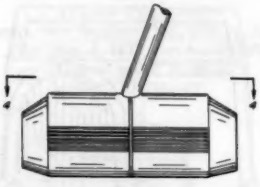
U.S. Cl. D21—109



255,475
TOY FIGURE
Robin P. Boot, Sutton Coldfield, England, assignor to The Mettoy Company Limited, Sutton Coldfield, England
Filed Mar. 7, 1977, Ser. No. 775,052
Claims priority, application United Kingdom, Oct. 11, 1976, 977499/76
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—166

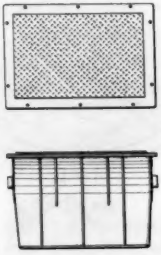
255,476
DOLL
Zula B. Cox, Rte. 1, Box 5A, Folsom, La. 70437
Filed Sep. 13, 1978, Ser. No. 942,005
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—169

255,477
PUTTER
Walter L. Gida, 401 Marvin Ave., North Versailles, Pa. 15137
Filed Dec. 16, 1977, Ser. No. 861,163
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—218



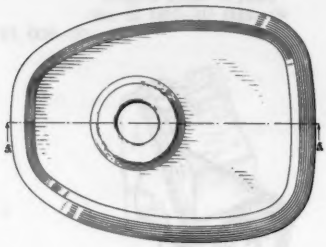
255,478
COLLIMATOR SPUD
James R. Chambers, Durango, Colo., assignor to Outdoor Sports Industries, Inc., Denver, Colo.
Filed Oct. 11, 1977, Ser. No. 841,144
Term of patent 14 years
Int. Cl. D22—*99*
U.S. Cl. D22—7

255,479
GREASE INTERCEPTOR
Bill H. Dye, St. Louis, and Karl G. Feth, St. Louis County, both of Mo., assignors to San-I-Tech of St. Louis, Inc., St. Louis, Mo.
Filed Apr. 5, 1978, Ser. No. 893,596
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—2

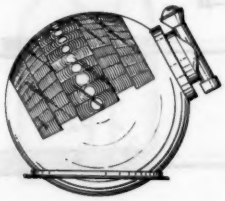


255,480
PUMP BASKET STRAINER
Steven A. Zieg, Anaheim, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.
Filed Aug. 22, 1977, Ser. No. 826,879
Term of patent 14 years
Int. Cl. D23—*01, 02*
U.S. Cl. D23—4

255,481
WATER CLOSET BASE
Billy R. Moore, 214 Reed, Parsons, Kans. 67357
Filed May 5, 1978, Ser. No. 903,139
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—69



255,482
SOLAR ENERGY COLLECTING DEVICE
Wagn Trautner, 2420 Winfield Scott Bldg., U.S. Soldiers & Airmens Home, Washington, D.C. 20137
Filed Jul. 25, 1978, Ser. No. 928,012
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—72

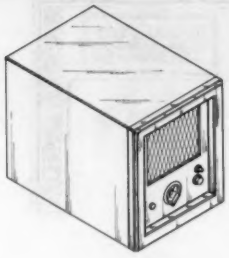


255,483
FIREPLACE MANTEL
Sam Gorman, 201 E. Chestnut, Chicago, Ill. 60611
Filed Sep. 18, 1978, Ser. No. 943,181
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—138.1

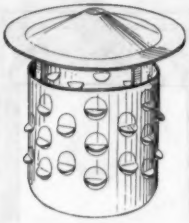
255,484
FIREPLACE MANTEL
Sam Gorman, 201 E. Chestnut, Chicago, Ill. 60611
Filed Sep. 18, 1978, Ser. No. 943,183
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—138.1

255,485
INSECTICIDE-CONTAINING INSECT COMBATTING DEVICE
Jack Greenberg, Richmond, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.
Filed Dec. 6, 1977, Ser. No. 857,989
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150

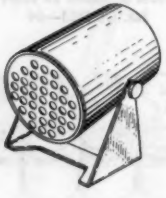
255,486
ROOM IONIZER
Alvin A. Bender, Sacramento, Calif., assignor to Valley Environments, Sacramento, Calif.
Filed Apr. 27, 1978, Ser. No. 901,278
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



255,487
CHIMNEY CAP
William J. Foley, 824 Acoma, Denver, Colo. 80204
Filed Mar. 29, 1978, Ser. No. 885,095
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—154

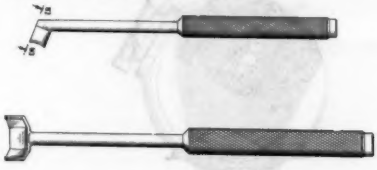


255,488
DESTATICIZING BLOWER
Jesse J. Kanarek, Los Altos, Calif., assignor to Dal Industries, Inc., Mountain View, Calif.
Filed Jan. 23, 1978, Ser. No. 871,523
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—155

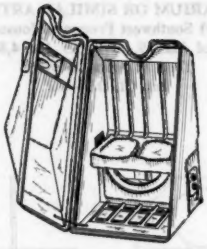


255,489
DESTATICIZING BLOWER
Jesse J. Kanarek, Los Altos, Calif., assignor to Dal Industries, Inc., Mountain View, Calif.
Filed Jan. 23, 1978, Ser. No. 871,527
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—155

255,490
TALAR SURFACE GAGE
Danny L. Pastrick, Warsaw, Ind., assignor to Zimmer USA, Inc., Warsaw, Ind.
Filed Mar. 20, 1978, Ser. No. 888,109
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—26

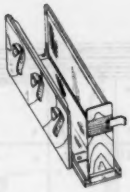


255,491
STEAM CABINET
Thomas J. Brancaccio, Atlantic Beach, and Bernardo P. Ragone, Lido Beach, both of N.Y., assignors to Vitamaster Industries, Inc., Brooklyn, N.Y.
Continuation-in-part of Ser. No. 763,425, Jan. 28, 1977, Pat. No. Des. 249,894, and a continuation-in-part of Ser. No. 763,426, Jan. 28, 1977, abandoned. This application Jul. 13, 1978, Ser. No. 924,450
Term of patent 14 years
Int. Cl. D23—*02;* D24—*99*
U.S. Cl. D24—37

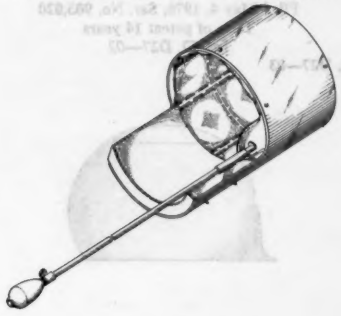


255,492
PHARMACEUTICAL DELIVERY BOTTLE
Eugene J. Meierhoefer, Hackettstown, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.
Continuation-in-part of Ser. No. 758,266, Jan. 10, 1977, Pat. No. Des. 249,958, and a continuation-in-part of Ser. No. 758,096, Jan. 10, 1977, abandoned. This application Aug. 30, 1977, Ser. No. 830,010
Term of patent 14 years
Int. Cl. D24—*04;* D9—*01*
U.S. Cl. D24—56

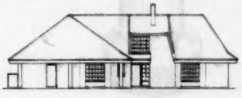
255,493
BOX SPLINT
Mortimer Gulden, East Jamaica, Vt. 05343
Filed Mar. 2, 1978, Ser. No. 882,954
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—64



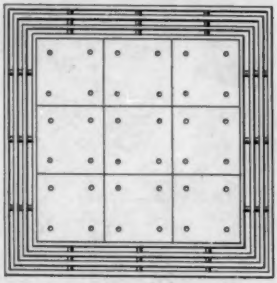
255,494
INFLATABLE HEAD RESTRAINT DEVICE
Joseph A. Weidinger, Anaheim, Calif., assignor to Omnimedical, Paramount, Calif.
Filed Mar. 20, 1978, Ser. No. 888,264
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—64



255,495
SINGLE FAMILY HOUSE
Tommy Sundström, Valhallavägen 174, S-10253 Stockholm, and Sören Berg, Hallekullevägen 6, S-43080 Hovas, both of Sweden
Filed Nov. 14, 1978, Ser. No. 961,390
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—17



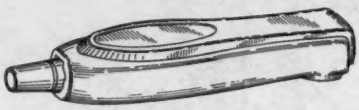
255,496
FLOOR STRUCTURE FOR AMUSEMENT DEVICE OR THE LIKE
Alphonse E. van Leggelo, Grand Rte. 35, 4493-Bassenge, Liege, Belgium
Filed Oct. 11, 1977, Ser. No. 840,711
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—80



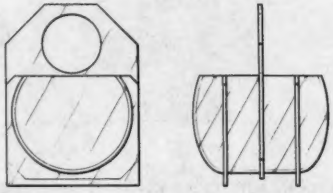
255,497
CIGARETTE SMOKING DEVICE WITH CONCEALED CIGARETTE HOLDER OR SIMILAR DEVICE
John G. Clarke, 708 Broadway, Bayonne, N.J. 07002
Filed May 4, 1978, Ser. No. 903,020
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—03

255,498
CIGARETTE SNUFFER
Henry D. Levun, 5851 N. Bernard St., Chicago, Ill. 60659
Filed Mar. 24, 1978, Ser. No. 890,088
Term of patent 14 years
Int. Cl. D27—*99*
U.S. Cl. D27—09

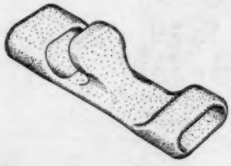
255,499
HAIR CURLING IRON
John L. Benty, Sands Point, N.Y., assignor to Schick Incorporated, Westport, Conn.
Filed Jun. 28, 1978, Ser. No. 920,221
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—35



255,500
AQUARIUM OR SIMILAR ARTICLE
Tony Robert, 5701 Southwest Freeway, Houston, Tex. 77057
Filed Jan. 19, 1979, Ser. No. 4,852
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—8



255,501
CLASP FOR A ROPE HALTER
Robert P. Anderson, 2800 S. University Blvd., #168, Denver, Colo. 80210
Filed Apr. 7, 1978, Ser. No. 894,351
Term of patent 14 years
Int. Cl. D30—*04*
U.S. Cl. D30—27

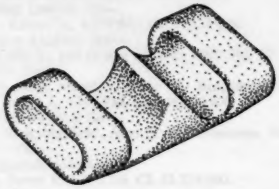


255,502

KEEPER FOR A ROPE HALTER

Robert P. Anderson, 2800 S. University Blvd., #168, Denver, Colo. 80210

Filed Apr. 7, 1978, Ser. No. 894,352
Term of patent 14 years
Int. Cl. D30—*04*
U.S. Cl. D30—27

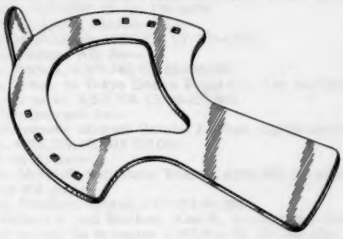


255,503

HORSESHOE

Rolf Carlmark, Domsjö, Sweden, assignor to Björn Strand, Klippan, Sweden

Filed Apr. 5, 1978, Ser. No. 893,812
Claims priority, application Sweden, Oct. 11, 1977, 772032
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—35



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF JUNE, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. C. Nielsen Company: *See*—
Marshall, Robert, 4,208,652, Cl. 340-146.30Y.

A. F. Hydraulics Limited: *See*—
Reynolds, Lionel A., 4,207,801, Cl. 91-278.000.

A.P.V. Company Limited: *See*—
Cowan, Colin T.; and Crane, Alan P., 4,207,942, Cl. 165-1.000.

A.R.M.I.N.E.S.: *See*—
Canteloup, Jean; Mocellin, Alain M.; Braguier, Michel A.; and Tueta, Roger J., 4,207,834, Cl. 118-620.000.

A/S Akers Mek. Versted: *See*—
Noensie, Nick; Stanfield, John N.; and Pettersen, Paal, 4,208,055, Cl. 277-1.000.

A/S Dansk Spaendbeton: *See*—
Moldrup, Soren J., 4,207,716, Cl. 52-224.000.

A/S Haustrup Plastic: *See*—
Ingemann, Ole, 4,207,989, Cl. 220-266.000.

AB Volvo: *See*—
Eghammer, Lars E.; and Ohlsson, Sven-Olof, 4,208,566, Cl. 219-86.100.

Abbott Laboratories: *See*—
Carney, Ronald E.; Martin, Jerry R.; McAlpine, James B.; and Tadanier, John S., 4,208,407, Cl. 424-180.000.

Abe, Takeshi, to Ricoh Company, Ltd. Data collection apparatus. 4,208,653, Cl. 340-151.000.

Abele, Karl-Heinz: *See*—
Hoffken, Erich; Kleine-Kleffmann, Werner; Bertram, Rolf; Abele, Karl-Heinz; and Michalski, Gunter, 4,208,039, Cl. 266-50.000.

Abraham, Jean-Jacques; and Pinson, Denis, to Compagnie Internationale pour l'Informatique. Current limiting arrangement for DC electrical apparatus. 4,208,708, Cl. 363-57.000.

Abrashev, Georgi I.: *See*—
Jordanov, Jordan T.; Abrashev, Georgi I.; Jekov, Velyu D.; Georgiev, Georgi T.; Haralampiev, Georgi A.; Janev, Janco H.; and Prodanov, Velcho A., 4,208,041, Cl. 266-196.000.

ACF Industries, Incorporated: *See*—
Alvarez, Patricio D.; and Kalsi, Manmohan S., 4,208,035, Cl. 251-196.000.
Burke, William G., Jr., 4,208,544, Cl. 178-22.000.
Zimmerle, James R.; and Baker, Thomas B., 4,207,822, Cl. 105-253.000.

Actrol Industries Pty. Ltd.: *See*—
Turner, Norman J., 4,208,644, Cl. 337-102.000.

Adler, Klaus: *See*—
August, Peter; Huber, Peter; Adler, Klaus; and Dressler, Wilfried, 4,208,319, Cl. 260-42.390.

Aerospex Corporation: *See*—
Wohlert, Chester G., 4,207,672, Cl. 29-611.000.

Ag Machinery & Safety, Inc.: *See*—
Beckham, L. S., 4,207,987, Cl. 209-691.000.

Aga Aktiebolag: *See*—
Ameen, Tore; and Dahlqvist, Jan E. B., 4,208,672, Cl. 358-6.000.

Agence Nationale de Valorisation de la Recherche (A.N.V.A.R.): *See*—
Exbrayat, Pierre E.; and Schutz, Richard A., 4,207,729, Cl. 57-296.000.

Agence Nationale de Valorization de la Recherche (ANVAR): *See*—
Bajon, Jean; Cattoen, Michel; Douchez, Jacques; and Morucci, Jean-Pierre, 4,208,675, Cl. 358-93.000.
Exbrayat, Pierre E.; and Schutz, Richard A., 4,207,729, Cl. 57-296.000.

Agency of Industrial Science & Technology, Ministry of International Trade & Industry: *See*—
Matsuda, Akihisa; and Iizima, Sigeru, 4,208,637, Cl. 331-94.50C.

AGFA-Gevaert, A.G.: *See*—
Muller, Jugen, 4,207,910, Cl. 137-14.000.
Muller, Jurgen, 4,208,121, Cl. 355-10.000.
Regele, Bruno, 4,207,788, Cl. 83-89.000.
Zachmeier, Alois; Wildner, Horst; and Kolbl, Heinz, 4,208,120, Cl. 354-354.000.

Aichert, Hans; Dietrich, Walter; Hauff, Alfred; Hoffmann, Otto-Horst; and Stephan, Herbert, to Leybold-Heraeus GmbH. Evaporating crucible. 4,208,042, Cl. 266-242.000.

Aihara, Takayuki: *See*—
Sogi, Shinroku; Yoshinaga, Makoto; Shinohara, Toshio; Aihara, Takayuki; and Tawara, Ikuo, 4,208,484, Cl. 435-286.000.

Airco, Inc.: *See*—
Bowman, Donald K., 4,208,149, Cl. 403-267.000.
Girrell, Carol A., 4,208,224, Cl. 148-16.500.

Airships International, Inc.: *See*—
Pavlecka, Vladimir H., 4,208,027, Cl. 244-126.000.

Aisan Industry Co., Ltd.: *See*—
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,207,849, Cl. 123-139.0AW.

Aisin Seiki Company, Limited: *See*—
Ishigami, Noriakira, 4,208,074, Cl. 303-6.00C.

Akermans Verkstad AB: *See*—
Ripa, Bjorn S., 4,207,740, Cl. 60-486.000.

Akiyama, Mineo, to Tokyo Design Kogei Co., Ltd. Movable sound producing model. 4,207,704, Cl. 46-232.000.

Akzona Incorporated: *See*—
Wallrabenstein, Michael; Behnke, Joachim; and Brodowski, Walter, 4,208,509, Cl. 528-207.000.

Alarie, Yves C.: *See*—
Karol, Meryl H.; and Alarie, Yves C., 4,208,399, Cl. 424-1.000.

Alfa-Laval AB: *See*—
Jonak, Vladimir, 4,208,031, Cl. 251-61.200.

Alford, Richard R.; and Stockner, Alan R., to Caterpillar Tractor Co. Inlet air passage for an engine. 4,207,854, Cl. 123-188.00M.

Allain, Ronald J.; Braithwaite, David G.; and Reid, Ansell L., to Nalco Chemical Co. Two-step process for removing boron compounds from aqueous solutions of magnesium chloride. 4,208,392, Cl. 423-497.000.

Allen, Paul E., to Logic Devices, Inc. Fluid cooling of injection molded plastic articles. 4,208,177, Cl. 425-404.000.

Allen, Reed R. Passive solar heating device. 4,207,865, Cl. 126-431.000.

Allerton, David A.: *See*—
Postupack, Dennis S.; Allerton, David A.; and Emmert, Richard L., 4,208,446, Cl. 430-124.000.

Allezard, Roland, to U.S. Philips Corporation. System for use in an aircraft for obstacle detection. 4,208,659, Cl. 343-14.000.

Allied Chemical Corporation: *See*—
Demmin, Timothy R.; and Rogic, Milorad M., 4,208,341, Cl. 260-438.100.
Patel, Gordhanbhai N., 4,208,186, Cl. 23-230.00R.
Yee, Kwok C.; Chance, Ronald R.; and Baughman, Ray H., 4,208,501, Cl. 526-259.000.

Allis-Chalmers Corporation: *See*—
Rossi, Eugene F., 4,208,181, Cl. 432-109.000.
Schroeder, Earle E.; and Campbell, John D., 4,208,166, Cl. 415-170.00A.

Alloy Surfaces Company, Inc.: *See*—
Baldi, Alfonso L., 4,208,453, Cl. 427-237.000.

Alsch, Gottfried, to Naimer, Hubert Laurenz. Switch board mount. 4,208,558, Cl. 200-296.000.

Altran Electronics, Inc.: *See*—
Martinez, Louis, 4,208,630, Cl. 375-7.000.

Alvarez, Patricio D.; and Kalsi, Manmohan S., to ACF Industries, Incorporated. Metal gate valve seat having a flexible front lip face seal. 4,208,035, Cl. 251-196.000.

Alza Corporation: *See*—
Michaels, Alan S., 4,207,893, Cl. 128-260.000.

Amabili, Arnaldo. Can top opening means. 4,207,991, Cl. 220-269.000.

Amati, Werner, to Sandoz Ltd. 2-Hydroxy-n-propylamine derivatives useful as surface active agents. 4,208,345, Cl. 260-507.00R.

Ameen, Tore; and Dahlqvist, Jan E. B., to Aga Aktiebolag. Method and apparatus for producing a color thermogram on photographic film. 4,208,672, Cl. 358-6.000.

Amerace Corporation: *See*—
Heenan, Sidney A., 4,208,090, Cl. 350-61.000.

American Brush Company, Inc.: *See*—
Kronfeld, Jerome; and Furst, Garry, 4,207,977, Cl. 206-361.000.

American Cyanamid Company: *See*—
Conrow, Ransom B.; and Bernstein, Seymour, 4,208,346, Cl. 260-510.000.
Wang, Samuel S.; Smith, Eugene L., Jr.; and Huliganga, Ernie F., 4,208,487, Cl. 521-117.000.

American Cystoscope Makers, Inc.: *See*—
Kruy, Theodore A., 4,207,873, Cl. 128-6.000.

American Home Products Corporation: *See*—
D'Amato, Richard F.; and Eriquez, Louis A., 4,208,480, Cl. 435-34.000.
Givner, Morris L., 4,208,187, Cl. 23-230.00B.
Ledig, Kurt W., deceased; and Howes, David R., executor, 4,208,520, Cl. 544-250.000.

Ameron, Inc.: *See*—
Magarian, Gerald M., 4,208,230, Cl. 156-184.000.

Amikura, Takashi; Kohtani, Yutaka; and Takahashi, Kiyoshi, to Canon Kabushiki Kaisha. Sound motion picture projector. 4,208,108, Cl. 352-27.000.

AMP Incorporated: *See*—
Teagno, Vladimiro, 4,208,080, Cl. 339-18.00B.

Ampex Corporation: *See—*
Beaulier, Daniel A., 4,208,680, Cl. 360-78.000.

Amtrol, Inc.: *See—*
Becker, Bernard B.; Bowman, John K.; and Randall, Cyril A., 4,207,915, Cl. 137-117.000.

Anciens Etablissements Leon Guilbert & Fils: *See—*
Moumaneix, Francis; and Marietta, Cesar, 4,208,571, Cl. 219-227.000.

Anderson, Dean B.: *See—*
Thompson, David E.; Anderson, Dean B.; August, Rudolf R.; and Yao, Shi-kay, 4,208,128, Cl. 356-350.000.

Anderson, Harold G., to General Electric Company. Lamp mount structure. 4,208,608, Cl. 313-279.000.

Anderson, John C.; Hutchinson, David W.; Terchick, Alvin A.; and Wen, Wu-wey, to United States Steel Corporation. Method of stabilizing aqueous fine coal slurry and product thereof. 4,208,217, Cl. 106-97.000.

Ando, Eiji: *See—*
Takeshita, Isao; Wakamatsu, Nobuhiko; Ando, Eiji; and Tanaka, Hiroyoshi, 4,207,744, Cl. 62-2.000.

Ando, Tsuneo: *See—*
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,207,849, Cl. 123-139.0AW.

Andrev, Anatoly G.; Makhanek, Mikhail E.; and Rubinchik, Ilya A. Device for manufacturing and inserting single-turn coils into magnetic core slots of electrical machines. 4,207,669, Cl. 29-564.500.

Andrews, H. Eugene, to Hughes Aircraft Company. Change of angular acceleration sensor. 4,207,769, Cl. 73-517.00A.

Andrieux, Claude; and Renaud, Pierre, to Commissariat a l'Energie Atomique. Liquid sampling apparatus. 4,207,922, Cl. 137-625.110.

Anheuser-Busch, Incorporated: *See—*
Ehrenthal, Irving; and Miner, Keith E., 4,208,482, Cl. 435-178.000.

Annis, Larry D., to Kendall Company, The. Compression device with ventilated sleeve. 4,207,876, Cl. 128-24.00R.

Anthony, Thomas R.: *See—*
Cline, Harvey E.; Anthony, Thomas R.; and Giaever, Ivar, 4,207,670, Cl. 29-576.00C.

Appleby, Anthony J.; and Crepy, Gilles, to Compagnie Generale d'Electricite. Bipolar electrode for an electrolyzer. 4,208,451, Cl. 427-126.000.

Application des Gaz: *See—*
Scremin, Gerard; and Urbano, Nino, 4,207,934, Cl. 141-383.000.

Applied Power Inc.: *See—*
Bayorgeon, Jeffrey T.; van Dalen, Dirk J.; and Legrand, Pierre N., 4,207,681, Cl. 33-180.0AT.

Arand, John K.; Muzio, Lawrence J.; and Sotter, John G., to Electric Power Research Institute, Inc. Urea reduction of NO_x in combustion effluents. 4,208,386, Cl. 423-235.000.

Arato, Laszlo F. Washing plant, particularly for cars and airplanes. 4,207,642, Cl. 15-53.0AB.

Arbour, Raymond L. Textured wood surfacing. 4,207,936, Cl. 144-320.00R.

Archer, Robert A.; and Day, William A., to Eli Lilly and Company. Stereoselective preparation of hexahydro dibenzopyranones and intermediates therefor. 4,208,351, Cl. 568-327.000.

Archibald, James B.: *See—*
Armor, Anthony F.; Darby, William L.; Archibald, James B.; and Landrio, Frank R., 4,208,599, Cl. 310-64.000.

Argade, Shyam D.: *See—*
Balko, Edward N.; and Argade, Shyam D., 4,208,258, Cl. 204-130.000.

Arkans, Edward J., to Kendall Company, The. Compression device with knee accommodating sleeve. 4,207,875, Cl. 128-24.00R.

Armor, Anthony F.; Darby, William L.; Archibald, James B.; and Landrio, Frank R., to General Electric Company. Integral composite nozzle-shield assembly for a gas-cooled dynamoelectric machine. 4,208,599, Cl. 310-64.000.

Arnush, Donald; MacKenzie, Kenneth R.; and Wuerker, Ralph F., to TRW Inc. Isotope separation apparatus. 4,208,582, Cl. 250-291.000.

Arthur G. McKee & Company: *See—*
Lutz, Irvin H., 4,208,307, Cl. 252-502.000.

Arzillo, Giuliano. Magnetic soap receptacle. 4,207,975, Cl. 206-77.100.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Chono, Masazumi; Maeda, Kunio; and Saito, Kunio, 4,208,320, Cl. 260-45.8NT.
Fukawa, Isaburo; Satake, Kunio; Yamada, Tsuyoshi; Hayakawa, Kiyoshi; and Sato, Yasushi, 4,208,356, Cl. 525-89.000.
Hashino, Yasuo; Hayano, Fusakazu; and Ito, Kenji, 4,208,508, Cl. 528-175.000.
Ohmura, Kaoru; Shibasaki, Ichiro; and Kimura, Takeo, 4,208,477, Cl. 430-281.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Ohkura, Zenichi, 4,208,102, Cl. 350-252.000.
Urano, Fumio; and Umetsu, Junji, 4,208,118, Cl. 354-288.000.

ASEA Aktiebolag: *See—*
Ling, Bernt, 4,208,125, Cl. 356-5.000.

Aspisi, Christian R.: *See—*
Demosthene, Claude G.; and Aspisi, Christian R., 4,208,354, Cl. 568-3.000.

Astle, William H.; and Pertle, John E., to Tri Tool, Inc. Cam follower tool arrangement. 4,207,786, Cl. 82-4.00C.

Atkins, Terrance J.; Cronin, James D.; and Hogeman, Robert L., to General Motors Corporation. Carburetor and method of calibration. 4,208,358, Cl. 261-50.00R.

Atlas Copco Aktiebolag: *See—*
Jonsson, Nils G., 4,207,805, Cl. 91-508.000.

ATO Chimie: *See—*
Deleens, Gerard; Jacques, Ferlampin; and Poulain, Claude, 4,208,493, Cl. 525-420.000.

Aubin, Jean-Marie; Graveline, Lionel; and Rioux, Leonard. Multipurpose staging horse. 4,207,966, Cl. 182-181.000.

Audeh, Costandi A.; and Yan, Tsoung Y., to Mobil Oil Corporation. Solvent extraction production of lube oil fractions. 4,208,263, Cl. 204-188.000.

Audinsu Auto Union AG: *See—*
Dommes, Werner; Hartl, Alfre; and Polzl, Hans-Werner, 4,207,742, Cl. 60-602.000.

August, Arthur; and Huber, John G., to Grumman Aerospace Corporation. Gantry for use in the manufacture of laminar structures. 4,208,238, Cl. 156-510.000.

August, Peter; Huber, Peter; Adler, Klaus; and Dressler, Wilfried, to Wacker-Chemie GmbH. Process for the preparation and use of silanes. 4,208,319, Cl. 260-42.390.

August, Rudolf R.: *See—*
Thompson, David E.; Anderson, Dean B.; August, Rudolf R.; and Yao, Shi-kay, 4,208,128, Cl. 356-350.000.

Auman, John T.; Mennucci, Donald F.; and Ricketts, James B., Jr., to General Motors Corporation. Exhaust gas oxygen sensor. 4,208,266, Cl. 204-195.00S.

Automatic Liquid Packaging, Inc.: *See—*
Weiler, Gerhard H.; and Pagels, Louis T., 4,207,990, Cl. 220-267.000.

Automation Development Corporation: *See—*
White, Frank F., 4,208,164, Cl. 414-748.000.

Avrea, Walter C.: *See—*
Hansen, Robert N., 4,208,065, Cl. 280-507.000.

Azuma, Daisaburo, to Pentel Kabushiki Kaisha. Nib for writing instruments. 4,208,145, Cl. 401-196.000.

B.A.T. Company Limited: *See—*
Seehofer, Friedlieb; and Kalies, Helmut, 4,207,906, Cl. 131-21.00D.

Baba, Kousaku: *See—*
Fujiki, Norio; Baba, Kousaku; and Mimura, Akitoshi, 4,208,658, Cl. 343-7.0VM.

Babanin, Boris I.; Glyanchenko, Vladimir D.; Grechanichenko, Grigory M.; Erkin, Leonid I.; Litvin, Evgeny M.; Matskevich, Daniil D.; Nefedov, Petr Y.; Pankratiev, Oleg N.; Dobrovolsky, Evgeny V.; Petrukhno, Anatoly S.; and Frumkin, Vladlen M. Method of heating multi-fractional materials and apparatus for implementation. 4,208,250, Cl. 201-10.000.

Babcock-Bsh Aktiengesellschaft Vormals Butner-Schilde-Haas AG: *See—*
Kisters, Theodor; and Vogler, Alfred, 4,208,383, Cl. 423-215.500.

Babcock & Wilcox Company, The: *See—*
Jabsen, Felix S., 4,208,248, Cl. 176-78.000.
Jabsen, Felix S., 4,208,249, Cl. 176-78.000.
Reed, Stuart E., 4,208,567, Cl. 219-86.100.

Babikyan, Jirair A., to Sanders Associates, Inc. Hydrophone having a plurality of directional outputs. 4,208,736, Cl. 367-153.000.

Bachofen & Meier, Maschinenfabrik: *See—*
Schmid, Walter, 4,207,998, Cl. 226-95.000.

Badger Company, Inc., The: *See—*
Murray, Ronald M., 4,208,529, Cl. 528-501.000.

Badrukhin, Jury I.: *See—*
Popov, Jury S.; Gorbunov, Gennady S.; Skachkov, Jury V.; and Badrukhin, Jury I., 4,208,598, Cl. 310-64.000.

Baggey, Gary. Drain strainer. 4,207,631, Cl. 4-286.000.

Bahr, Albert, to Bergwerksverband GmbH. Flotation plant. 4,208,276, Cl. 209-168.000.

Bajon, Jean; Cattoen, Michel; Douchez, Jacques; and Morucci, Jean-Pierre, to Agence Nationale de Valorization de la Recherche (ANVAR). Method and apparatus for positioning an object. 4,208,675, Cl. 358-93.000.

Baker, Edward S.; and Barnett, Gilbert L., to Gil-Bar Trailer Corporation. Trailer steerable when in reverse. 4,208,063, Cl. 280-445.000.

Baker, Richard H., to Exxon Research & Engineering Co. Inverter with naturally commutated mixer. 4,208,711, Cl. 363-136.000.

Baker, Thomas B.: *See—*
Zimmerle, James R.; and Baker, Thomas B., 4,207,822, Cl. 105-253.000.

Bakewicz, Frank J.; Bouchard, Patrick M.; and Pringle, Patrick W., to General Motors Corporation. Non-marring spot weld tip. 4,208,568, Cl. 219-86.310.

Baldi, Alfonso L., to Alloy Surfaces Company, Inc. Modified diffusion coating of the interior of a steam boiler tube. 4,208,453, Cl. 427-237.000.

Baldwin, John J., to Merck & Co., Inc. N-Aralkyl containing cyanopyridines. 4,208,416, Cl. 424-263.000.

Balka, William J., Jr. Automatic ball server. 4,207,857, Cl. 124-56.000.

Balko, Edward N.; and Argade, Shyam D. Method for the recovery of mercury and other heavy metal ions from a liquid stream. 4,208,258, Cl. 204-130.000.

Ball Corporation: *See—*
Friebel, Virgil R.; Roller, Kent G.; and Deitrick, Jack L., 4,208,629, Cl. 324-457.000.

Baltek Corporation: *See—*
Kohn, Jean, 4,208,369, Cl. 264-46.500.

Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., to Olinkraft, Inc. Paperboard tray. 4,208,007, Cl. 229-31.00R.

Barcza, Sandor, to Sandoz, Inc. Substituted 1-oxa-4-aza-2,6-disilacyclohexanes. 4,208,408, Cl. 424-184.000.

Bard, Max L. Mixing system. 4,208,375, Cl. 422-225.000.
Bargain, Michel; and Lefort, Marcel, to Rhone-Poulenc Industries. Polyethylene silicon compounds. 4,208,342, Cl. 556-436.000.
Barham, Doris, heir: *See—*
Barham, Harold N., Jr.; Barham, Harold N., deceased; and Barham, Doris, heir, 4,208,433, Cl. 426-69.000.
Barham, Harold N., deceased: *See—*
Barham, Harold N., Jr.; Barham, Harold N., deceased; and Barham, Doris, heir, 4,208,433, Cl. 426-69.000.
Barham, Harold N., Jr.; Barham, Harold N., deceased; and by Barham, Doris, heir. Method for the adsorption of solids by whole seeds. 4,208,433, Cl. 426-69.000.
Barker, Larry D.: *See—*
Murray, E. Donald; Maurice, Terrence J.; Barker, Larry D.; and Myers, Chester D., 4,208,323, Cl. 260-112.00G.
Barlow, Melvin C.; Loersch, Joseph F.; and Basche, Malcolm, deceased (by Basche, Joyce O., heir), to United Technologies Corporation. In situ interlayer formation for transient liquid phase diffusion bonding. 4,208,222, Cl. 148-6.000.
Barmag Barmer Maschinenfabrik AG: *See—*
Turk, Herbert; Honigmann, Gunter; Martens, Gerhard; and Schewe, Lothar, 4,208,560, Cl. 219-10.49R.
Barnett, Gilbert L.: *See—*
Baker, Edward S.; and Barnett, Gilbert L., 4,208,063, Cl. 280-445.000.
Barriquand: *See—*
Barriquand, Bernard, 4,207,759, Cl. 68-15.000.
Barriquand, Bernard, to Barriquand. Machine, especially a dyeing machine, for pieces of fabric. 4,207,759, Cl. 68-15.000.
Barry, Bernard R. Bird feeder. 4,207,839, Cl. 119-51.00R.
Barthell, Eduard: *See—*
Nowak, Rudolf; Dahmen, Kurt; and Barthell, Eduard, 4,208,184, Cl. 8-94.230.
Basche, Joyce O., heir: *See—*
Barlow, Melvin C.; Loersch, Joseph F.; and Basche, Malcolm, deceased, 4,208,222, Cl. 148-6.000.
Basche, Malcolm, deceased: *See—*
Barlow, Melvin C.; Loersch, Joseph F.; and Basche, Malcolm, deceased, 4,208,222, Cl. 148-6.000.
BASF Aktiengesellschaft: *See—*
Bronstert, Klaus; Klaerner, Peter; and Staiger, Gerhard, 4,208,497, Cl. 526-138.000.
Stutz, Herbert; Illers, Karl H.; and Schuster, Ludwig, 4,208,507, Cl. 528-64.000.
BASF Wyandotte Corporation: *See—*
Kakar, Sarwan K.; and Cramer, John J., 4,208,463, Cl. 428-276.000.
Bastiao, Manuel J. Mixing device. 4,208,135, Cl. 366-219.000.
Bate, Geoffrey; and Dunn, Larry P., to International Business Machines Corporation. Method for disorienting magnetic particles. 4,208,447, Cl. 427-48.000.
Bates, Jack A. Carpet cleaning machine. 4,207,649, Cl. 15-319.000.
Baughman, Ray H.: *See—*
Yee, Kwok C.; Chance, Ronald R.; and Baughman, Ray H., 4,208,501, Cl. 526-259.000.
Bauman, Robert A., to Colgate-Palmolive Company. Quaternary ammonium alkylene diphosphonate anti-calculus agents. 4,208,401, Cl. 424-54.000.
Baumeister, Peter: *See—*
Rasberger, Michael; and Baumeister, Peter, 4,208,525, Cl. 546-184.000.
Bausch & Lomb Incorporated: *See—*
Deichert, William G.; Falcetta, Joseph J.; and Su, Kai C., 4,208,362, Cl. 264-1.000.
Deichert, William G.; Su, Kai C.; and vanBuren, Martin F., 4,208,506, Cl. 528-32.000.
Baxter Travenol Laboratories, Inc.: *See—*
Munsch, John M.; and Wolf, Ludwig, Jr., 4,208,193, Cl. 55-36.000.
Stevens, Barbara E., 4,208,132, Cl. 366-101.000.
Bayer Aktiengesellschaft: *See—*
Preiss, Michael; and Metzger, Karl G., 4,208,412, Cl. 424-250.000.
Schmidt, Manfred; Cohnen, Wolfgang; Kleiner, Frank; Freitag, Dieter; and Idel, Karsten, 4,208,489, Cl. 525-146.000.
Bayorgeon, Jeffrey T.; van Dalen, Dirk J.; and Legrand, Pierre N., to Applied Power Inc. Vehicle measuring bridge. 4,207,681, Cl. 33-180.0AT.
BBC Brown, Boveri & Cie.: *See—*
Pouillange, Jean-Paul, 4,207,745, Cl. 62-55.000.
Rohr, Andre, 4,208,692, Cl. 361-87.000.
BBC Brown, Boveri & Co.: *See—*
Kehlhofer, Rolf, 4,207,842, Cl. 122-406.00S.
BBC Brown Boveri & Company Limited: *See—*
Meylan, Pierre, 4,208,003, Cl. 228-169.000.
Beam, Dennis A., Jr.; and Sarazen, Paul M., Jr. Ventilator assembly. 4,208,010, Cl. 236-49.000.
Beaulier, Daniel A., to Ampex Corporation. Real time magnetic video digital recording and reproducing apparatus. 4,208,680, Cl. 360-78.000.
Beavers, Allan E.: *See—*
Pelsue, Bradley A.; and Beavers, Allan E., 4,207,685, Cl. 34-107.000.
Becht, Carl T., to Senco Products, Inc. Intralumenal anastomosis surgical stapling instrument. 4,207,898, Cl. 128-305.000.
Becker, Bernard B.; Bowman, John K.; and Randall, Cyril A., to Amtrol, Inc. Back flow preventer. 4,207,915, Cl. 137-117.000.
Becker, Dieter J. Process for the purification of sewage while recapturing the fatty and albuminous matter in reusable form. 4,208,282, Cl. 210-44.000.
Becker, Henry E.; McConnell, Albert L.; and Schutte, Richard W. Bonded, differentially creped, fibrous webs and method and apparatus for making same. 4,208,459, Cl. 428-154.000.
Becker, Karl-Heinz; Knopfel, Hans-Dieter; Nicklas, Alexander; Hergt, Peter; and Diler, Engin, to Klein, Schanzlin & Becker Aktiengesellschaft. Impeller for centrifugal pumps. 4,208,169, Cl. 416-185.000.
Beckert, Reiner, to Bleitchert Forderanlagen GmbH. Monorail conveyor. 4,207,821, Cl. 104-119.000.
Beckham, L. S., to Ag Machinery & Safety, Inc. Apparatus and method for spiral separation of materials. 4,207,987, Cl. 209-691.000.
Beckman Instruments, Inc.: *See—*
Oh, Chan S., 4,208,106, Cl. 350-345.000.
Becton, Dickinson and Company: *See—*
Eldridge, William N., 4,207,870, Cl. 128-766.000.
Beer, Carl C.; and Steffey, Ronald E., to Sherman Industries, Inc. Dry wiping system for vehicles. 4,207,643, Cl. 15-97.00B.
Behnke, Joachim: *See—*
Wallrabenstein, Michael; Behnke, Joachim; and Brodowski, Walter, 4,208,509, Cl. 528-207.000.
Bell, David G.: *See—*
Lofthouse, Charles H.; Bell, David G.; and Phillips, Leyland R., 4,208,277, Cl. 209-223.00A.
Bell, Frederick K.; and Tuss, John J., to Bendix Corporation, The. Coordinate measuring machine having an air counterbalance system. 4,207,680, Cl. 33-174.00R.
Bell, James D.: *See—*
Sandeman, Allan M.; and Bell, James D., 4,207,937, Cl. 150-1.000.
Bell Telephone Laboratories, Incorporated: *See—*
Blahut, Donald E.; and Cooper, James A., Jr., 4,208,728, Cl. 365-154.000.
Bowden, Murrae J. S.; Felt, Eugene D.; Thompson, Larry F.; and Wilkins, Cletus W., Jr., 4,208,211, Cl. 430-314.000.
Ebert, Harry K., Jr., 4,208,627, Cl. 324-102.000.
Harshbarger, William R.; Levinstein, Hyman J.; Mogab, Cyril J.; and Porter, Roy A., 4,208,241, Cl. 156-643.000.
Kaplan, Alan E., 4,208,553, Cl. 179-175.30A.
Miller, Gabriel L., 4,208,624, Cl. 324-60.00R.
Tomlinson, Walter J., III; and Wagner, Richard E., 4,208,094, Cl. 350-96.200.
Bellofram Corporation: *See—*
St. Laurent, Wilfred H., Jr., 4,208,060, Cl. 277-212.0FB.
Belyakov, Viktor P.; Gustov, Vilgelm F.; Step, Khaim Y.; Garin, Vadim A.; Orlov, Valentin K.; Kortikov, Viktor S.; Prokofieva, Nina A.; Terushkina, Anna E.; and Vinogradova, Ljudmila B. Mass exchange apparatus. 4,208,360, Cl. 261-114.00R.
Bemis Company, Inc.: *See—*
Wolske, Eugene H., 4,207,983, Cl. 206-554.000.
Bendix Corporation, The: *See—*
Bell, Frederick K.; and Tuss, John J., 4,207,680, Cl. 33-174.00R.
Lamborn, Omer E., 4,208,738, Cl. 367-173.000.
Bennell, Frank T.: *See—*
Garnham, Martin H. F.; and Bennell, Frank T., 4,208,709, Cl. 363-90.000.
Benson, William G.: *See—*
Markkanen, Carl O.; Benson, William G.; and Goldstein, Amnon, 4,208,009, Cl. 235-475.000.
Berg, Ake K., to Telefonaktiebolaget L M Ericsson. Address and break signal generator. 4,208,713, Cl. 364-200.000.
Bergfeld, Robert A.; Patel, Shashi P.; and Schlickenrieder, Lynn M., to N L Industries, Inc. Dust repellent paint. 4,208,496, Cl. 525-3.000.
Bergwerksverband GmbH: *See—*
Bahr, Albert, 4,208,276, Cl. 209-168.000.
Berkowitz, Sidney, to FMC Corporation. Cyanuric acid chlorination with alkali metal hypochlorite. 4,208,519, Cl. 544-190.000.
Berlec, Ivan, to General Electric Company. Squirm resistant filament. 4,208,609, Cl. 313-315.000.
Bernstein, Seymour: *See—*
Conrow, Ransom B.; and Bernstein, Seymour, 4,208,346, Cl. 260-510.000.
Bertram, Rolf: *See—*
Hoffken, Erich; Kleine-Kleffmann, Werner; Bertram, Rolf; Abele, Karl-Heinz; and Michalski, Gunter, 4,208,039, Cl. 266-50.000.
Berwick, Leonard J.; Weiss, Jay I.; and Besden, Norman M., to Berwick, Leonard J. Television projection system. 4,208,676, Cl. 358-237.000.
Besden, Norman M.: *See—*
Berwick, Leonard J.; Weiss, Jay I.; and Besden, Norman M., 4,208,676, Cl. 358-237.000.
Beseke, Kermit M.; Hoffmann, James E.; and Kopecki, Ronald J., to Motorola, Inc. Digital pulsed DC remote-control system. 4,208,631, Cl. 455-92.000.
Bethlehem Steel Corporation: *See—*
Wald, Herbert; Young, Harold K.; and Meadows, Lacy C., 4,207,831, Cl. 118-63.000.
Betzler, Otto; and Kunzig, Adalbert, to Michael Weinig Kommanditgesellschaft. Tool grinding machine for profile tools, especially for wood and plastic working machines. 4,207,709, Cl. 51-100.00R.
Bib Hi-Fi Accessories Limited: *See—*
Westran, William C., 4,207,644, Cl. 15-210.00R.
Biesinger, Erwin; and Mollendorf, Eckard, to Seco Maschinenbau GmbH & Co KG. Dry-cleaning method and arrangement. 4,207,638, Cl. 8-150.000.

Biffle, Morris S. Rotating blowout preventor with index kelly drive bushing and stripper rubber. 4,208,056, Cl. 277-31.000.

Bimond, Jean-Pierre; Etcheverria, Jean-Michel; Lazarre, Flavien; and Veron, Andre, to Societe Nationale Elf Aquitaine (Production). Miniature volumetric pump. 4,207,806, Cl. 92-31.000.

Binder, Arnold. Method and apparatus for the diagnosis of tissue samples. 4,207,892, Cl. 128-665.000.

Binner, Paul: *See—*
Scrivo, Leonard; Binner, Paul; and Weinstein, Louis, 4,208,579, Cl. 250-227.000.

Bio-Gas of Colorado, Inc.: *See—*
Varani, Frederick T., 4,208,279, Cl. 210-12.000.

Bischl, Johann. Apparatus for controlling the cross section of a beam of light. 4,208,100, Cl. 350-272.000.

Biszantz, Donald W., to Easco Tools, Inc. Wedge for wooden handled tool. 4,208,148, Cl. 403-251.000.

Bixler, Kenneth D.; Ralphs, Robert E.; Lord, Henry A.; and Reifers, Richard F., to Diamond International Corporation. Molded pulp tray for beverage and food. 4,208,006, Cl. 229-2.50R.

Blackstone, Robert L. Compound bow. 4,207,858, Cl. 124-23.00R.

Blahut, Donald E.; and Cooper, James A., Jr., to Bell Telephone Laboratories, Incorporated. Programable logic array. 4,208,728, Cl. 365-154.000.

Blaimschein, Gottfried: *See—*
Kralowetz, Bruno; and Blaimschein, Gottfried, 4,208,156, Cl. 409-165.000.

Bland, Walter P.: *See—*
McKendry, Lennon H.; and Bland, Walter P., 4,208,514, Cl. 544-11.000.

Blase, Emil F.: *See—*
Philpott, Conrad L.; and Blase, Emil F., 4,208,699, Cl. 361-433.000.

Bleasdale, Barrie, to Edgar Pickering (Blackburn) Limited. Knife assembly for tufting machines. 4,207,825, Cl. 112-79.00R.

Bleich, Simon. Angled cutter. 4,207,789, Cl. 83-697.000.

Bleicher, Manfred: *See—*
Reibetanz, Wilbert; Sigg, Horst; Wiesner, Herbert; Wanner, Karl; Hansel, Gernot; Seitz, Karl; and Bleicher, Manfred, 4,207,953, Cl. 175-209.000.

Bleitchert Forderanlagen GmbH: *See—*
Beckert, Reiner, 4,207,821, Cl. 104-119.000.

Blockfabrik Lichtensteig, AG: *See—*
Knechtle, Bruno; and Dahler, Paul, 4,208,460, Cl. 428-195.000.

Blomquist, Cecil R.; and O'Hiser, Rodney L. Jet electric generator. 4,208,590, Cl. 290-1.00R.

Bloomer, Thomas M., to United States of America, Army. Dipole antenna for proximity fuze. 4,207,841, Cl. 102-214.000.

Blume, John H.; Bushnell, James D.; and Leighton, Milton D., to Exxon Research & Engineering Co. Removing H_2S from gas with recycled NMP extraction solvent. 4,208,382, Cl. 423-210.000.

Boatman, Martin R.; Robertson, Phillip E.; and Gaughan, Martin M., to Dynamic Toy Company, Inc. Light transmissive flying saucer with chemical lightstick. 4,207,702, Cl. 46-74.00D.

Bochan, John, to General Electric Company. Vane arrangement for clothes washing machine. 4,207,760, Cl. 68-18.0FA.

Bock, Jan: *See—*
Lundberg, Robert D.; Bock, Jan; and Makowski, Henry S., 4,208,310, Cl. 260-23.50A.

Bode, Rudolf: *See—*
Nauroth, Peter; Esch, Heinz; Kuhlmann, Robert; Bode, Rudolf; Reisert, Arthur; Buhler, Harald; and Turk, Gunter, 4,208,316, Cl. 260-37.0SB.

Bodenseewerk Perkin-Elmer & Co., GmbH: *See—*
Huber, Bernhard W., 4,208,372, Cl. 422-65.000.

Boeing Company, The: *See—*
Trethewy, Brian R., 4,208,153, Cl. 406-72.000.

Bohde, Richard C.: *See—*
Tomson, James M.; and Bohde, Richard C., 4,207,931, Cl. 141-1.000.

Boise Cascade Corporation: *See—*
Hearon, William M.; and Lo, Cheng F., 4,208,350, Cl. 568-324.000.

Bolduc, Lee R., to Population Research Incorporated. Dispensing instrument with supported balloon. 4,207,891, Cl. 128-235.000.

Bolles, Theodore F.: *See—*
Kubiatowicz, David O.; and Bolles, Theodore F., 4,208,398, Cl. 424-1.000.

Bondinell, William E.; and Pendleton, Robert G., to SmithKline Corporation. Pharmaceutical compositions and method of inhibiting phenylethanolamine N-methyltransferase. 4,208,430, Cl. 424-326.000.

Bore, Pierre; and Tourenq, Lucienne, to L'Oreal. Process for improving the appearance of oily hair or skin. 4,208,402, Cl. 424-70.000.

Borg-Warner Corporation: *See—*
Zeidler, Reinhold C., 4,207,972, Cl. 192-111.00A.

Borst, Wolfgang; Klotzner, Winfried; Pagel, Ernst-Olav; and Vetter, Hermann, to Robert Bosch GmbH. Simplified computer ignition control system. 4,207,846, Cl. 123-117.00D.

Borsuk, Leslie M., to International Telephone and Telegraph Corporation. Fiber optic ferrule and method of terminating same to a cable. 4,208,093, Cl. 350-96.200.

Bouchard, Patrick M.: *See—*
Bakewicz, Frank J.; Bouchard, Patrick M.; and Pringle, Patrick W., 4,208,568, Cl. 219-86.310.

Bouyoucos, John V., to Hydroacoustics Inc. Methods and apparatus for use in generating and transmitting acoustic signals. 4,207,962, Cl. 181-119.000.

Bowden, Murrae J. S.; Felt, Eugene D.; Thompson, Larry F.; and Wilkins, Cletus W., Jr., to Bell Telephone Laboratories, Incorporated. Fabrication based on radiation sensitive resists and related products. 4,208,211, Cl. 430-314.000.

Bowman, Donald K., to Airco, Inc. Electrode connecting pin assembly. 4,208,149, Cl. 403-267.000.

Bowman, James L.; and Rowley, Terry J., to Long-Lok Fasteners Corporation. Notched applicator wheel. 4,207,832, Cl. 118-212.000.

Bowman, John K.: *See—*
Becker, Bernard B.; Bowman, John K.; and Randall, Cyril A., 4,207,915, Cl. 137-117.000.

Boyd, Rodney E. Solar heating system including freeze protection. 4,207,866, Cl. 126-420.000.

Boyle, Malachy V.; and Dugan, Edward J., to General Electric Company. Insulating support means mounting bus conductors through an opening in a grounded metal wall. 4,208,543, Cl. 174-152.00R.

Bradley, Thompson G., to General Motors Corporation. Bipolar battery. 4,208,473, Cl. 429-112.000.

Braguier, Michel A.: *See—*
Canteloup, Jean; Mocellin, Alain M.; Braguier, Michel A.; and Tueta, Roger J., 4,207,834, Cl. 118-620.000.

Braham, Richard R. M.: *See—*
Lockett, James F.; Mehrkam, Thomas O.; and Braham, Richard R. M., 4,207,985, Cl. 209-564.000.

Braithwaite, David G.: *See—*
Allain, Ronald J.; Braithwaite, David G.; and Reid, Ansell L., 4,208,392, Cl. 423-497.000.

Brammall, Inc.: *See—*
Gillette, Robert H., 4,207,708, Cl. 51-67.000.

Bray, Donald T., to Desalination Systems, Inc. Reverse osmosis apparatus employing a reciprocating membrane cartridge. 4,208,289, Cl. 210-321.00R.

Bray, Martin L.: *See—*
Polillo, William M.; Bray, Martin L.; Reno, Richard W.; and La Mere, Albert J., 4,208,549, Cl. 179-6.30R.

Bresak, Ann F.; and Tolgyesi, Eva, to Gillette Company, The. UV-Curable siloxane razor blade lacquers. 4,208,471, Cl. 428-447.000.

Bressler, Mark. Method of repairing water closet anchoring to fractured closet flange and spanner clamp therefor. 4,207,630, Cl. 4-252.00R.

Bridger, Robert F., to Mobil Oil Corporation. Phosphomolybdate compounds and their use as lubricant additives. 4,208,292, Cl. 252-32.70E.

Brieck, Eugene F. Oil spill skimmer. 4,208,287, Cl. 210-242.00S.

Brill, Frank D., to Restaurant Technology, Inc. Dual reservoir coffee urn. 4,207,809, Cl. 99-279.000.

Bristol-Myers Company: *See—*
Crenshaw, Ronnie R.; and Montzka, Thomas A., 4,208,521, Cl. 544-250.000.

Brodowski, Walter: *See—*
Wallrabenstein, Michael; Behnke, Joachim; and Brodowski, Walter, 4,208,509, Cl. 528-207.000.

Bronstert, Klaus; Klaerner, Peter; and Staiger, Gerhard, to BASF Aktiengesellschaft. Manufacture of homopolymers and copolymers of α-monoolefins. 4,208,497, Cl. 526-138.000.

Brouzes, Raymond J., to Domtar Inc. Process for treatment of waste waters. 4,208,283, Cl. 210-50.000.

Brown, Alfred: *See—*
Hall, Wilbur L.; French, Charles R.; Wu, Ching H.; and Brown, Alfred, 4,207,945, Cl. 166-272.000.

Brown, Donald J., to Knox Manufacturing Co. Tray for sorting and storing photographic transparency slides. 4,207,979, Cl. 206-456.000.

Brown, Garrett; and DiGuilio, Arnold O., to Brown, Garrett. Support apparatus. 4,208,028, Cl. 224-185.000.

Brown, John H. Timed medicine dispenser. 4,207,992, Cl. 221-15.000.

Brown, Norman A.: *See—*
Prouty, Myron R.; Nichols, Colin J.; Brown, Norman A.; and Sutter, Stephen P., 4,207,988, Cl. 215-232.000.

Brown, William C., Jr.: *See—*
Sheldon, Edward J.; Brown, William C., Jr.; Shovlin, Thomas D.; and Wagner, Ronald A., 4,208,632, Cl. 328-117.000.

Bruinsma, Robert F.: *See—*
Greis, Howard A.; and Bruinsma, Robert F., 4,207,785, Cl. 82-2.00R.

Brun, Craig W.; and Hand, Wilfred L., to GTE Products Corporation. AFC System for a synthesizer tuning system. 4,208,741, Cl. 455-180.000.

Brunswick Corporation: *See—*
Farmer, Cloyd C., 4,207,782, Cl. 81-9.510.
Gifford, Richard L., 4,208,020, Cl. 242-84.20G.

Bryden, Joseph E.; Larsen, Ole J.; and O'Callaghan, Desmond, to Raytheon Company. Electronic automatic plotter. 4,208,657, Cl. 343-5.0DP.

Bryer, Philip S., to PerSci, Inc. Positioner cone for flexible disks. 4,208,682, Cl. 360-99.000.

Buckle, Valerie A.: *See—*
Lyall, Robert; Maxwell, Ian; and Buckle, Valerie A., 4,208,189, Cl. 44-42.000.

Bucknam, Ralph E. Automated typewriter attachment. 4,208,140, Cl. 400-171.000.

Buckner, Carrol E., to Smoky Mountain Enterprises, Inc. Fire box gas baffle and hood. 4,207,861, Cl. 126-83.000.

Buehring, Willi J.: *See—*
Oloff, Clarence M.; Buehring, Willi J.; and Greenlees, Kevin J., 4,207,889, Cl. 128-213.00R.

Bugler, Thomas W., III; and Fritz, Gerald D., to Marley Company, The. Low head non-clogging water distribution nozzle for cooling towers. 4,208,359, Cl. 261-111.000.

Buhler, Harald: *See*—
Nauroth, Peter; Esch, Heinz; Kuhlmann, Robert; Bode, Rudolf; Reisert, Arthur; Buhler, Harald; and Turk, Gunter, 4,208,316, Cl. 260-37.0SB.

Bunker Ramo Corporation: *See*—
Davies, Andrew; and Taylor, Derek, 4,208,082, Cl. 339-45.00M.
Gregg, Roland S., Jr., 4,208,626, Cl. 324-77.00A.
Monaghan, Kevin J.; Schwickert, Russell C.; and Makuch, John A., 4,208,092, Cl. 350-96.210.

Burchell, Clarence: *See*—
Causey, Warren L.; Yeager, Harvey P.; and Burchell, Clarence, 4,207,675, Cl. 30-296.00R.

Burdeska, Kurt, to Ciba-Geigy Corporation. Benzoxazolyl-phenylstilbenes, processes for producing them, and their use as optical brighteners. 4,208,513, Cl. 542-459.000.

Burke, William G., Jr., to ACF Industries, Incorporated. Checker and automatic synchronizer for coding equipment. 4,208,544, Cl. 178-22.000.

Burleigh Instruments, Inc.: *See*—
German, Kenneth R., 4,208,636, Cl. 331-94.50P.

Burns, David; and Spicer, James R., to Insulation Distributors, Incorporated. Insulation jacket. 4,207,918, Cl. 137-375.000.

Burroughs Corporation: *See*—
Chu, Mosi, 4,208,142, Cl. 400-320.000.
Templeton, William B., 4,208,075, Cl. 308-4.00R.

Burson, James. Device for loading muzzle loading rifles and method of preparing the device. 4,207,698, Cl. 42-90.000.

Burzin, Klaus: *See*—
Horlbeck, Gernot; Burzin, Klaus; and Feinauer, Roland, 4,208,527, Cl. 528-279.000.

Bushnell, James D.: *See*—
Blume, John H.; Bushnell, James D.; and Leighton, Milton D., 4,208,382, Cl. 423-210.000.

Butler, Bill J.: *See*—
Leliaert, Raymond M.; Kanouse, Richard C.; Butler, Bill J.; and Linder, Robert N., 4,207,711, Cl. 51-432.000.

C.P.R. Engineering Developments Limited: *See*—
Rowe, Howard; and Rowe, Paul A., 4,208,045, Cl. 269-100.000.

Calbiochem-Behring Corp.: *See*—
Yavrouian, Andre H., 4,208,204, Cl. 71-97.000.

Calgon Corporation: *See*—
Wagner, Norman J., 4,208,232, Cl. 156-276.000.

Callahan, John W., to Pennwalt Corporation. Aftermarket speedometer cable and casing assemblies and methods of fabrication thereof. 4,207,666, Cl. 29-402.080.

Caloyannis, Theodore: *See*—
Saconney, Jean E.; and Caloyannis, Theodore, 4,208,130, Cl. 356-428.000.

Camardella, Giuseppe, to Tekma Kinomat S.p.A. Braiding device for coil winding machines. 4,207,927, Cl. 140-102.000.

Campbell, John D.: *See*—
Schroeder, Earle E.; and Campbell, John D., 4,208,166, Cl. 415-170.00A.

Canadian General Electric Company Limited: *See*—
Rynard, Richard H. J., 4,208,570, Cl. 219-208.000.

Canas-Rodriquez, Antonio. Synthetic aminoglycosides. 4,208,531, Cl. 536-17.00R.

Canon Kabushiki Kaisha: *See*—
Amikura, Takashi; Kohtani, Yutaka; and Takahashi, Kiyoshi, 4,208,108, Cl. 352-27.000.
Ito, Fumio; Sunouchi, Akio; Matsuda, Mutsuhide; Suzuki, Ryoichi; Uchiyama, Takashi; and Watanabe, Yoshiaki, 4,208,110, Cl. 354-31.000.
Ito, Fumio; and Yazaki, Mutsunobu, 4,208,114, Cl. 354-86.000.

Canteloup, Jean; Mocellin, Alain M.; Braguier, Michel A.; and Tueta, Roger J., to A.R.M.I.N.E.S.; and Etat Francais. Process and devices for the elaboration of preforms for optical fibers. 4,207,834, Cl. 118-620.000.

Cantor, Arnold J.: *See*—
Cheo, Peter K.; and Cantor, Arnold J., 4,208,126, Cl. 356-51.000.

Carl Zeiss-Stiftung: *See*—
Trapp, Lothar; and Conradi, Rudolf, 4,208,101, Cl. 350-175.0ML.

Carlos, Mark F.; Jon, Min-Chung; and Palazzo, Vito, to Western Electric Company, Inc. Method and apparatus for monitoring cracking using stress wave emission techniques. 4,207,771, Cl. 73-587.000.

Carney, Ronald E.; Martin, Jerry R.; McAlpine, James B.; and Tadanier, John S., to Abbott Laboratories. 5-Deoxyfortimicin A, 2,5-dideoxyfortimicin A and the corresponding 4-N-acyl and alkyl fortimicin B derivatives thereof and intermediates therefor. 4,208,407, Cl. 424-180.000.

Carolon Company: *See*—
Hampton, Richard; and Hanes, P. Frank, Jr., 4,207,885, Cl. 128-156.000.

Carr, John B., to Shell Oil Company. Lipogenesis inhibition by certain esters of substituted benzodioxincarboxylic acids. 4,208,424, Cl. 424-278.000.

Carrier Corporation: *See*—
Lavigne, William J., Jr., 4,207,749, Cl. 62-115.000.

Casberg, John M.: *See*—
Sangster, Arlon G.; Casberg, John M.; and Tepas, Joseph J., 4,208,376, Cl. 422-261.000.

Castriotta, Michele; de Bosio, Alfredo; De Micheli, Spiridione; Lobisch, Gunter; Manucci, Franco; and Semprini, Pio, to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A. Malfunction-detecting equipment for real-time supervision of central-office circuits in telecommunication system. 4,208,552, Cl. 179-175.20D.

Caterpillar Tractor Co.: *See*—
Alford, Richard R.; and Stockner, Alan R., 4,207,854, Cl. 123-188.00M.
Chamberlain, Richard W., 4,207,968, Cl. 188-71.400.
Frantzreb, John G., Sr.; and Reinhart, Daniel J., 4,208,563, Cl. 219-73.000.
Stedman, Robert N., 4,207,967, Cl. 187-9.00E.
Untz, Robert W., 4,208,029, Cl. 249-183.000.

Cattoen, Michel: *See*—
Bajon, Jean; Cattoen, Michel; Douchez, Jacques; and Morucci, Jean-Pierre, 4,208,675, Cl. 358-93.000.

Causey, Warren L.; Yeager, Harvey P.; and Burchell, Clarence. Adjustable utility extension handle for electrically powered handtool. 4,207,675, Cl. 30-296.00R.

Cavalli, Luciano: *See*—
Formaro, Leonardo; Cavalli, Luciano; Gellera, Artemio; and Fraschini, Marco, 4,208,253, Cl. 204-1.00T.

Cehovic, Georges: *See*—
Lapinet, Eugene; Cehovic, Georges; and Posternak, Theodore, 4,208,406, Cl. 424-180.000.

Celanese Corporation: *See*—
Stackman, Robert W.; and Conciatori, Anthony B., 4,208,502, Cl. 526-292.000.

Cem Compagnie Electro-Mecanique: *See*—
Chaboseau, Jean; and Regef, Andre, 4,207,754, Cl. 62-402.000.

Centralny Osrodek Badawczo-Rozwojowy Maszyn Wlokienniczych: *See*—
Ostrowski, Jerzy; Sierputowski, Piotr; Turkowski, Lukasz; Jablkiewicz, Jerzy; Pacholski, Jan; and Jedryka, Tadeusz, 4,207,728, Cl. 57-58.890.

Centre National d'Etudes Spatiales: *See*—
Groult, Alain M. M.; Tournier, Herve N.; and Fayet, Philippe, 4,208,505, Cl. 528-30.000.

Centre Scientifique et Technique du Batiment: *See*—
Chaboseau, Jean; and Regef, Andre, 4,207,754, Cl. 62-402.000.

Centro Ricerche Fiat S.p.A.: *See*—
Taricco, Stefano, 4,208,174, Cl. 425-78.000.

Ceriani, Julius J., to Tenneco Chemicals, Inc. Cushion construction. 4,207,636, Cl. 5-481.000.

Cerny, Jacqueline; and Vivant, Gilbert, to Rhone-Poulenc Industries. Flameproofed plastic compositions. 4,208,317, Cl. 260-38.000.

Cerroni, Manlio. Apparatus for separating plastic film from paper particularly adapted for use in waste recycling systems. 4,207,986, Cl. 209-616.000.

Chaboseau, Jean; and Regef, Andre, to Cem Compagnie Electro-Mecanique; and Centre Scientifique et Technique du Batiment. Air-conditioning system suitable for residential use. 4,207,754, Cl. 62-402.000.

Chamberlain, Richard W., to Caterpillar Tractor Co. Double disc type brake system. 4,207,968, Cl. 188-71.400.

Champion International Corporation: *See*—
Dutcher, Daniel P., 4,208,012, Cl. 239-57.000.

Chan, David C. K.; and Whipp, Arthur A., to Chevron Research Company. Quaternary ammonium salt catalyzed preparation of sulfonamides. 4,208,348, Cl. 260-556.00A.

Chance, Ronald R.: *See*—
Yee, Kwok C.; Chance, Ronald R.; and Baughman, Ray H., 4,208,501, Cl. 526-259.000.

Chang, David C., to Du Pont de Nemours, E. I., and Company. Clear coat/color coat finish containing an antioxidant and an ultraviolet light stabilizer. 4,208,465, Cl. 428-416.000.

Chang, Leroy L.; Esaki, Leo; and Sai-Halasz, George A., to United States of America, Army. Controlled absorption in heterojunction structures. 4,208,667, Cl. 357-16.000.

Chang, Wen-Hsuan; Erikson, J. Alden; and Porter, Samuel, Jr., to PPG Industries, Inc. Composition useful in making extensible films. 4,208,494, Cl. 525-440.000.

Chang, Wen-Hsuan; Erikson, J. Alden; and Porter, Samuel, Jr., to PPG Industries, Inc. Composition useful in making extensible films. 4,208,495, Cl. 525-440.000.

Chatenay, Catherine M. Modular space structuration device. 4,207,713, Cl. 52-9.000.

Chauvette, Robert R., to Eli Lilly and Company. 3-Halo cephalosporins. 4,208,515, Cl. 544-16.000.

Chemische Fabrik Stockhausen & Cie: *See*—
Nowak, Rudolf; Dahmen, Kurt; and Barthell, Eduard, 4,208,184, Cl. 8-94.230.

Chemische Werke Huls, Aktiengesellschaft: *See*—
Horlbeck, Gernot; Burzin, Klaus; and Feinauer, Roland, 4,208,527, Cl. 528-279.000.

Chemoprojekt: *See*—
Polak, Josef; and Mrazek, Josef, 4,208,264, Cl. 204-195.00C.

Chen, Jimmy M.; Chen, Signor Y.; and Chen, Vincent S. Wind turbine. 4,208,168, Cl. 416-132.00B.

Chen, Signor Y.: *See*—
Chen, Jimmy M.; Chen, Signor Y.; and Chen, Vincent S., 4,208,168, Cl. 416-132.00B.

Chen, Vincent S.: *See*—
Chen, Jimmy M.; Chen, Signor Y.; and Chen, Vincent S., 4,208,168, Cl. 416-132.00B.

Cheo, Peter K.; and Gilden, Meyer, to United Technologies Corporation. Broadband microwave waveguide modulator for infrared lasers. 4,208,091, Cl. 350-96.130.

Cheo, Peter K.; and Cantor, Arnold J., to Electric Power Research Institute, Inc. System for detecting foreign particles or voids in electrical cable insulation and method. 4,208,126, Cl. 356-51.000.

Chev, Boris L. G.: *See—*
Kuchuk-Yatsenko, Sergei I.; Krivenko, Valery G.; Podola, Nikolai V.; Krivonos, Vadim P.; and Chev, Boris L. G., 4,208,569, Cl. 219-97.000.
Chevron Research Company: *See—*
Chan, David C. K.; and Whipp, Arthur A., 4,208,348, Cl. 260-556.00A.
Chianelli, Russell R., to Exxon Research & Engineering Co. Commercial production of transition metal sulfides from their halides. 4,208,394, Cl. 423-561.00R.
Chiang-Cheng, Fu; and Yin-Lung, Yang. Gliding cars and tracks type high building emergency escaping device. 4,207,965, Cl. 182-13.000.
Chiba, Takeshi: *See—*
Kurono, Masayasu; Hamanaka, Nobuyuki; Sakuyama, Shigeru; Chiba, Takeshi; and Nakai, Hisao, 4,208,428, Cl. 424-305.000.
Childress, David L.; Hayes, William V.; and Poppe, Richard L., to Dow Chemical Company. The. Catalyst for making acrylic acid from acrolein or propylene. 4,208,306, Cl. 252-456.000.
Chino, Nobuo: *See—*
Hane, Yoshio; and Chino, Nobuo, 4,208,576, Cl. 235-452.000.
Cho, Hideo; Takenoshita, Yukinori; and Sugimoto, Saisuke, to Oiles Industry Co., Ltd. Composite bearing material and method of making the same. 4,208,472, Cl. 428-550.000.
Chono, Masazumi; Maeda, Kunio; and Saito, Kunio, to Asahi Kasei Kogyo Kabushiki Kaisha. Flame retardant resin composition comprising reaction product of polyguanamine compound and cyanuric or isocyanuric acid compound. 4,208,320, Cl. 260-45.8NT.
Choy, Daniel S. J. Laser tunnelling device. 4,207,874, Cl. 128-6.000.
Christensen, Burton G.; and Leanza, William J., to Merck & Co., Inc. O-Derivatives of thienamycin. 4,208,330, Cl. 260-326.310.
Christensen, Burton G.; and Shih, David H., to Merck & Co., Inc. 1-Substituted-pen-2-em-3-carboxylic acids. 4,208,422, Cl. 424-274.000.
Chu, Mosi, to Burroughs Corporation. Print head locating utilizing sonic techniques. 4,208,142, Cl. 400-320.000.
Chung, Han-Chang, to Kearney & Trecker Corporation. Method of optimizing the operation of a computer controlled machine tool. 4,208,718, Cl. 364-474.000.
Church, Larry L.: *See—*
Sun, Shan C.; and Church, Larry L., 4,208,687, Cl. 361-20.000.
Ciba-Geigy Corporation: *See—*
Burdeska, Kurt, 4,208,513, Cl. 542-459.000.
Dingwall, John G.; Cook, Barry; and Marshall, Alan, 4,208,344, Cl. 260-502.40R.
Haberli, Roland; Mollet, Hans; and Tempel, Christel, 4,208,370, Cl. 264-117.000.
Ramanathan, Visvanathan, 4,208,324, Cl. 260-156.000.
Ramey, Chester E.; and Luzzi, John J., 4,208,522, Cl. 544-385.000.
Rasberger, Michael; and Baumeister, Peter, 4,208,525, Cl. 546-184.000.
Tobler, Hans; Fory, Werner; and Schurter, Rolf, 4,208,202, Cl. 71-88.000.
Cicin-Sain, Ivo, to Matisa Materiel Industriel S.A. Mobile apparatus for the renewal and for the construction of railway tracks. 4,207,820, Cl. 104-2.000.
CIMA S.p.A. di C. Sabbioni & C.: *See—*
Sabbioni, Cesare, 4,208,155, Cl. 409-3.000.
Citizen Watch Co., Ltd.: *See—*
Ishigaki, Hisao; and Tanaka, Ryuzo, 4,207,735, Cl. 368-300.000.
Clagnaz, Mario W., Jr.: *See—*
Youdin, Myron; Clagnaz, Mario W., Jr.; and Louie, Henry, 4,207,959, Cl. 180-167.000.
Clark, K. Warren: *See—*
Friello, Dominick R.; Witzel, Frank; Clark, K. Warren; and Mackay, Donald A. M., 4,208,431, Cl. 426-3.000.
Claypoole, Stewart A.; Lynn, Merrill; and Miller, Roger A., to Corning Glass Works. Filament coating system. 4,208,200, Cl. 65-11.00W.
Cline, Harvey E.; Anthony, Thomas R.; and Giaever, Ivar, to General Electric Company. Method for making a solid state neuron. 4,207,670, Cl. 29-576.00C.
Cloutier, Jean-Marie. Knee prosthesis. 4,207,627, Cl. 3-1.911.
Coates, Ronald, to Standard Oil Company (Indiana). Semi-regenerative reforming process providing continuous hydrogen production. 4,208,397, Cl. 423-651.000.
Cobe Laboratories, Inc.: *See—*
Giurtino, Joel F., 4,207,923, Cl. 137-625.470.
Coca-Cola Company, The: *See—*
Iacobucci, Guillermo A.; and Sweeny, James G., 4,208,434, Cl. 426-72.000.
Coffen, David L., to Hoffmann-La Roche Inc. Novel 4-phenoxy-5-sulfamylbenzoic acid. 4,208,535, Cl. 562-430.000.
Coffey, Jess R.: *See—*
Savell, Jesse J., Jr.; and Coffey, Jess R., 4,207,632, Cl. 4-288.000.
Coggins, Robert W.; and Staley, Edwin H., to Combustion Engineering, Inc. Means for control of fluid distribution in low temperature separator. 4,208,196, Cl. 55-174.000.
Cohen, Noal; and Saucy, Gabriel, to Hoffmann-La Roche Inc. Synthesis of optically active vitamin E. 4,208,331, Cl. 260-340.90R.
Cohen, Noal; and Saucy, Gabriel, to Hoffmann-La Roche Inc. Synthesis of optically active vitamin E. 4,208,332, Cl. 260-340.90R.
Cohen, Noal, to Hoffmann-La Roche Inc. Preparation of chroman-2-acetic acids. 4,208,333, Cl. 260-345.500.
Cohnen, Wolfgang: *See—*
Schmidt, Manfred; Cohnen, Wolfgang; Kleiner, Frank; Freitag, Dieter; and Idel, Karsten, 4,208,489, Cl. 525-146.000.
Coleman, Bobby W.; Frassanito, John R.; Norman, Richard O.; and Parke, James G., to Micro-Gen Equipment Corporation. Portable chemical spraying apparatus with disposable chemical container. 4,208,013, Cl. 239-351.000.
Colgate-Palmolive Company: *See—*
Bauman, Robert A., 4,208,401, Cl. 424-54.000.
Schaar, Charles H., 4,207,895, Cl. 128-287.000.
Collister, Frank C. Key bolt. 4,207,794, Cl. 85-7.000.
Colston, John R., to Westinghouse Electric Corp. Diver support apparatus. 4,208,152, Cl. 405-186.000.
Combest, John F., to R. L. Kuss and Company. Method of making pulsation bag. 4,207,724, Cl. 53-403.000.
Combustion Engineering, Inc.: *See—*
Coggins, Robert W.; and Staley, Edwin H., 4,208,196, Cl. 55-174.000.
Sullivan, Robert P.; and Jacobs, Clyde L., 4,207,648, Cl. 15-316.00R.
Comerford, Matthias F.; Munroe, Thomas N.; and O'Rourke, Harold T., to Hollis Engineering, Inc. Wave soldering system. 4,208,002, Cl. 228-37.000.
Commissariat a l'Energie Atomique: *See—*
Andrieux, Claude; and Renaud, Pierre, 4,207,922, Cl. 137-625.110.
Communications Satellite Corporation: *See—*
Lu, Shyue-Ching; Lee, Lin-nan; and Fang, Russell J. F., 4,208,739, Cl. 375-2.000.
Compagnie Francaise des Petroles: *See—*
Jerome, Robert, 4,207,954, Cl. 175-330.000.
Compagnie Generale d'Electricite: *See—*
Appleby, Anthony J.; and Crepy, Gilles, 4,208,451, Cl. 427-126.000.
Compagnie Generale des Etablissements Michelin: *See—*
Massoubre, Jean-Marie, 4,208,498, Cl. 526-179.000.
Roger, Jack, 4,207,940, Cl. 152-362.00R.
Compagnie Internationale pour l'Informatique: *See—*
Abraham, Jean-Jacques; and Pinson, Denis, 4,208,708, Cl. 363-57.000.
Concept Engineering, Inc.: *See—*
Geschwender, Robert C., 4,208,070, Cl. 297-118.000.
Conciatori, Anthony B.: *See—*
Stackman, Robert W.; and Conciatori, Anthony B., 4,208,502, Cl. 526-292.000.
Coney, Charles H., to Eastman Kodak Company. Dielectric coating compositions and recording sheets made therefrom. 4,208,467, Cl. 428-480.000.
Conrad, John R.: *See—*
Klass, Donald L.; and Conrad, John R., 4,208,387, Cl. 423-243.000.
Conradi, Rudolf: *See—*
Trapp, Lothar; and Conradi, Rudolf, 4,208,101, Cl. 350-175.0ML.
Conrow, Ransom B.; and Bernstein, Seymour, to American Cyanamid Company. s-Phenenyltris(sulfonylimino)tri-benzene mono-and di-sulfonic acids and salts. 4,208,346, Cl. 260-510.000.
Consan Pacific Incorporated: *See—*
Saurenman, Donald G., 4,208,438, Cl. 426-235.000.
Consolidated Devices Inc.: *See—*
Grabovac, Bosko, 4,207,783, Cl. 81-52.500.
Continental Oil Company: *See—*
Gorin, Everett, 4,208,395, Cl. 423-567.00A.
Conwed Corporation: *See—*
Kelly, Michael G.; and Pastien, Eugene R., 4,208,457, Cl. 428-107.000.
Cook, Barry: *See—*
Dingwall, John G.; Cook, Barry; and Marshall, Alan, 4,208,344, Cl. 260-502.40R.
Cook, John S.: *See—*
Lambert, Gerard L.; and Cook, John S., 4,207,935, Cl. 144-1.00R.
Cook, William: *See—*
Huggett, Richard D. J.; and Cook, William, 4,208,036, Cl. 254-150.00R.
Cooper, Erwin E.; and McKenney, Samuel R., to Texas Instruments Incorporated. Optical flexure joint. 4,208,087, Cl. 350-16.000.
Cooper, James A., Jr.: *See—*
Blahut, Donald E.; and Cooper, James A., Jr., 4,208,728, Cl. 365-154.000.
Cope, Rick R.; and Rosengrants, Delbert L., to Jojan, Inc.; and Necco, David A. Means for increasing traction in racehorse horseshoes. 4,207,947, Cl. 168-29.000.
Copeland Corporation: *See—*
Rosen, Shelvin, 4,208,221, Cl. 134-19.000.
Copeland, Leonard H.; and Wible, Joseph B., to Datcon Instrument Company. Elapsed time indicator. 4,207,733, Cl. 368-108.000.
Corban Industries, Inc.: *See—*
Lass, Harold M., 4,208,239, Cl. 156-575.000.
Corning Glass Works: *See—*
Claypoole, Stewart A.; Lynn, Merrill; and Miller, Roger A., 4,208,200, Cl. 65-11.00W.
Costantini, Michel; and Jouffret, Michel, to Rhone-Poulenc Industries. Process for the preparation of para-benzoquinone. 4,208,339, Cl. 260-396.00R.
Costantini, Michel; Dromard, Adrien; Jouffret, Michel; and Nantermet, Roland, to Rhone-Poulenc Industries. Hydroxylation of aromatic compounds. 4,208,536, Cl. 568-771.000.
Cosyns, Jean; and Derrien, Michel, to Institut Francais du Petrole. Process for the selective hydrogenation of gasolines comprising both gum-generating compounds and undesirable sulfur compounds. 4,208,271, Cl. 208-255.000.
Cottier, Derek; and Rossell, John B., to Lever Brothers Company. Food fats. 4,208,445, Cl. 426-607.000.

Couch, Robert W.: *See—*
Eastlund, Bernard J.; Wood, Charles H.; Couch, Robert W.; and Ury, Michael G., 4,208,587, Cl. 250-492.00R.
Couwenberg, Winston D., to U.S. Philips Corporation. Low-pressure mercury vapor discharge lamp. 4,208,604, Cl. 313-113.000.
Cowan, Colin T.; and Crane, Alan P., to A.P.V. Company Limited. Plate heat exchangers. 4,207,942, Cl. 165-1.000.
Cowan, Stanley M. Glutaraldehyde sterilizing compositions. 4,208,404, Cl. 424-153.000.
Cowan, Wallace C. Internally stressed club holding collars for golf bags. 4,208,227, Cl. 150-1.50R.
Cox, Daniel: *See—*
Jones, Bernard H.; Cox, Daniel; and Gallagher, Don R., 4,208,016, Cl. 242-18.00G.
Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., to Merck & Co., Inc. N-Pyrazinecarbonyl-N'-alkoxycarbonyl and N',N''-bis(alkoxycarbonyl)guanidines and processes for preparing same. 4,208,413, Cl. 424-250.000.
Craig, James R.; and Nerge, Steven F., to Raytheon Company. Power assist fluoroscopic table. 4,208,586, Cl. 250-447.000.
Cramer, John J.: *See—*
Kakar, Sarwan K.; and Cramer, John J., 4,208,463, Cl. 428-276.000.
Crane, Alan P.: *See—*
Cowan, Colin T.; and Crane, Alan P., 4,207,942, Cl. 165-1.000.
Crenshaw, Ronnie R.; and Montzka, Thomas A., to Bristol-Myers Company. Process for the preparation of imidazo[2,1-b]quinazolinones. 4,208,521, Cl. 544-250.000.
Crepy, Gilles: *See—*
Appleby, Anthony J.; and Crepy, Gilles, 4,208,451, Cl. 427-126.000.
Crise, W. Paul. Cleaner using high velocity air jets having a double valve having an equal number of jet nozzles operating at all times. 4,207,650, Cl. 15-404.000.
Crisefi, Charles J. Emergency ignition for internal combustion engines. 4,207,851, Cl. 123-148.0DS.
Crisp, David J.: *See—*
Maxwell, Donald J.; and Crisp, David J., 4,207,982, Cl. 206-534.000.
Crompton & Knowles Corporation: *See—*
Sepavich, Victor F., 4,207,926, Cl. 139-196.300.
Cronin, James D.: *See—*
Atkins, Terrance J.; Cronin, James D.; and Hogeman, Robert L., 4,208,358, Cl. 261-50.00R.
Cross, Andrew C. Yard roller. 4,208,151, Cl. 404-122.000.
Croyle, Jack V., to Dart Industries Inc. Handled carrier for containers. 4,207,997, Cl. 224-55.000.
CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Castriotta, Michele; de Bosio, Alfredo; De Micheli, Spiridione; Lobisch, Gunter; Manucci, Franco; and Semprini, Pio, 4,208,552, Cl. 179-175.20D.
CSF-Compagnie Generale de Telegraphie sans Fil: *See—*
Orieux, Francois, 4,208,733, Cl. 367-125.000.
Cundari, Sante M.: *See—*
Deardorff, Paul A.; Wood, Robert C.; and Cundari, Sante M., 4,208,226, Cl. 149-37.000.
Cunningham, John A.; and Reade, Grahame M., to Imperial Chemical Industries Limited. Polyester/vinyl chloride polymer laminates. 4,208,468, Cl. 428-315.000.
Cutter Laboratories, Inc.: *See—*
Prouty, Myron R.; Nichols, Colin J.; Brown, Norman A.; and Sutter, Stephen P., 4,207,988, Cl. 215-232.000.
D & D Electric, Inc.: *See—*
Howson, Edward H., 4,207,933, Cl. 141-106.000.
Dahler, Paul: *See—*
Knechtle, Bruno; and Dahler, Paul, 4,208,460, Cl. 428-195.000.
Dahlhaus, Peter; Simon, Willi; and Striepeke, Wilhelm, to Hoesch Werke Aktiengesellschaft. Rail connection adjustable laterally and as to height. 4,208,011, Cl. 238-281.000.
Dahlqvist, Jan E. B.: *See—*
Ameen, Tore; and Dahlqvist, Jan E. B., 4,208,672, Cl. 358-6.000.
Dahmen, Kurt: *See—*
Nowak, Rudolf; Dahmen, Kurt; and Barthell, Eduard, 4,208,184, Cl. 8-94.230.
Dai Nippon Toryo Co., Ltd.: *See—*
Hase, Takashi; Kagami, Akiyasu; Mimura, Yoshiyuki; Narita, Kinichiro; and Hiraki, Minoru, 4,208,612, Cl. 313-495.000.
Hase, Takashi; Kagami, Akiyasu; Mimura, Yoshiyuki; Narita, Kinichiro; and Hiraki, Minoru, 4,208,613, Cl. 313-495.000.
Daily, Thomas E., to Fedders Corporation. Air heater arrangement for a clothes dryer. 4,207,686, Cl. 34-133.000.
Daimler-Benz Aktiengesellschaft: *See—*
Huber, Guntram; Hutai, Hubert; Klie, Wolfgang; and Fischer, Wolfgang, 4,208,069, Cl. 293-102.000.
Dainippon Ink and Chemicals, Inc.: *See—*
Ono, Seibei; and Shibuya, Koichi, 4,208,318, Cl. 260-40.00P.
D'Amato, Richard F.; and Eriquez, Louis A., to American Home Products Corporation. Method, reagents and apparatus for the rapid identification of *Neisseria gonorrhoeae* and *Neisseria meningitidis*. 4,208,480, Cl. 435-34.000.
D'Angelo, Joseph J.; and Maccherone, Lawrence, to Flexible Design Packaging Machine Company. Method and apparatus for automatic sheet cutting and stacking. 4,207,667, Cl. 29-417.000.
Darby, William L.: *See—*
Armor, Anthony F.; Darby, William L.; Archibald, James B.; and Landrio, Frank R., 4,208,599, Cl. 310-64.000.
Dart Industries Inc.: *See—*
Croyle, Jack V., 4,207,997, Cl. 224-55.000.
Dashwood, Nigel J. R.; and Plummer, Dexter R., to Schumag GmbH. Optical scanner. 4,208,589, Cl. 250-560.000.
Data General Corporation: *See—*
Rasala, Edward J.; and Young, Charles J., 4,208,722, Cl. 364-760.000.
Datcon Instrument Company: *See—*
Copeland, Leonard H.; and Wible, Joseph B., 4,207,733, Cl. 368-108.000.
Datta, Ranajit K.: *See—*
McVey, Charles I.; and Datta, Ranajit K., 4,208,605, Cl. 313-221.000.
Dauphin, Rene; and Maquet, Nestor, to Solvay & Cie. Laminated structure comprising a layer of fluorinated polymer. 4,208,462, Cl. 428-265.000.
Dauvergne, Hector A. Oil bath boiler. 4,207,840, Cl. 122-31.00R.
Davidson, Ronnie D.: *See—*
Misencik, John J.; and Davidson, Ronnie D., 4,208,688, Cl. 361-46.000.
Davies, Andrew; and Taylor, Derek, to Bunker Ramo Corporation. Quick-release electrical connectors. 4,208,082, Cl. 339-45.00M.
Davies, Philip H.; and Lohning, Franklin M., to Franklin Enterprises, Inc. Auxiliary offshore rig and methods for using same. 4,208,158, Cl. 414-22.000.
Davis, Stanley M.: *See—*
Helt, Raymond E.; and Davis, Stanley M., 4,207,776, Cl. 74-235.000.
Day, William A.: *See—*
Archer, Robert A.; and Day, William A., 4,208,351, Cl. 568-327.000.
De Hydro Corporation, The: *See—*
Stannard, Forrest B.; and Highstreet, Edward J., 4,208,288, Cl. 210-277.000.
Deardorff, Paul A.; Wood, Robert C.; and Cundari, Sante M. Energy producing waste material composition. 4,208,226, Cl. 149-37.000.
Death, Frank S., to Union Carbide Corporation. Method for producing improved metal castings by pneumatically refining the melt. 4,208,206, Cl. 75-60.000.
de Bosio, Alfredo: *See—*
Castriotta, Michele; de Bosio, Alfredo; De Micheli, Spiridione; Lobisch, Gunter; Manucci, Franco; and Semprini, Pio, 4,208,552, Cl. 179-175.20D.
Deere & Company: *See—*
Steilen, Ronald M.; and Junge, Steve A., 4,207,823, Cl. 111-85.000.
Deichert, William G.; Falcetta, Joseph J.; and Su, Kai C., to Bausch & Lomb Incorporated. Shaped body of at least two polymerized materials and method to make same. 4,208,362, Cl. 264-1.000.
Deichert, William G.; Su, Kai C.; and vanBuren, Martin F., to Bausch & Lomb Incorporated. Polyparaffinsiloxane shaped article for use in biomedical applications. 4,208,506, Cl. 528-32.000.
Deitrick, Jack L.: *See—*
Friebel, Virgil R.; Roller, Kent G.; and Deitrick, Jack L., 4,208,629, Cl. 324-457.000.
Delaunay, Pierre: *See—*
Maillard, Jacques; Delaunay, Pierre; and Legeai, Jacky, 4,208,420, Cl. 424-270.000.
Delebecque, Robert P.; Goupil, Georges A.; and Velte, Andre J., to Societe Anonyme de Telecommunications. Automatons. 4,208,619, Cl. 318-4.000.
Deleens, Gerard; Jacques, Ferlampin; and Poulain, Claude, to ATO Chimie. Process for continuous synthesis of poly (ether-ester-amide) sequence copolycondensates. 4,208,493, Cl. 525-420.000.
De Micheli, Spiridione: *See—*
Castriotta, Michele; de Bosio, Alfredo; De Micheli, Spiridione; Lobisch, Gunter; Manucci, Franco; and Semprini, Pio, 4,208,552, Cl. 179-175.20D.
Demmin, Timothy R.; and Rogic, Milorad M., to Allied Chemical Corporation. Copper (II) reagent and preparation thereof. 4,208,341, Cl. 260-438.100.
Demol, Jean-Baptiste, to Staar, S.A. Tape transport mechanism of movable frame type with lateral guides. 4,208,023, Cl. 242-198.000.
Demosthene, Claude G.; and Aspisi, Christian R., to Expansia. Borane complexes. 4,208,354, Cl. 568-3.000.
de Nevers, Noel H.: *See—*
Gardner, James H.; and de Nevers, Noel H., 4,207,943, Cl. 165-1.000.
Derckx, Henricus A. J. M. Method for making confectionery lollipops. 4,208,437, Cl. 426-134.000.
Derderian, George; Mohon, Windell N.; Maldonato, Eugene D.; and Rodemann, Alfred H., to United States of America, Navy. Pilot training simulator. 4,207,688, Cl. 35-12.00N.
Derrien, Michel: *See—*
Cosyns, Jean; and Derrien, Michel, 4,208,271, Cl. 208-255.000.
Desalination Systems, Inc.: *See—*
Bray, Donald T., 4,208,289, Cl. 210-321.00R.
Desbrandes, Robert, to Institut Francais du Petrole. Method and device for determining the geometrical outline of the underwater part of icebergs and the draught thereof. 4,208,731, Cl. 367-11.000.
Despatch Industries, Inc.: *See—*
Melgaard, Hans L., 4,208,572, Cl. 219-400.000.
Deutsch, Murray L., to Mobil Oil Corporation. Multi-unit optimization. 4,208,712, Cl. 364-105.000.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Muller, Karl-Hans; and Tailfer, Roland, 4,208,213, Cl. 106-10.000.
Nauroth, Peter; Esch, Heinz; Kuhlmann, Robert; Bode, Rudolf; Reisert, Arthur; Buhler, Harald; and Turk, Gunter, 4,208,316, Cl. 260-37.0SB.

Deutschmann, Herbert: *See*—
Dinger, Hans; and Deutschmann, Herbert, 4,207,848, Cl. 123-122.00D.
Devlacminck, Gerard: *See*—
Ragout, Bernard; and Devlacminck, Gerard, 4,208,067, Cl. 285-242.000.
Diagnostic Information, Inc.: *See*—
Wang, Shih-Ping, 4,208,577, Cl. 250-213.0VT.
Dial, Howard S., to Gulf Seal Corporation. Floating cover assembly. 4,208,469, Cl. 428-315.000.
Diamond International Corporation: *See*—
Bixler, Kenneth D.; Ralphs, Robert E.; Lord, Henry A.; and Reifers, Richard F., 4,208,006, Cl. 229-2.50R.
Diamond Shamrock Corporation: *See*—
Gammon, Charles T., 4,208,301, Cl. 252-321.000.
Lewis, David L.; Schenker, Barry A.; Suchanski, Mary R.; and Franks, C. Richard, deceased, 4,208,450, Cl. 427-126.300.
Szur, Alex J., 4,208,466, Cl. 428-477.000.
Diana, Guy D., to Sterling Drug Inc. Novel diketones. 4,208,425, Cl. 424-282.000.
Dick, Perry J., Jr., to Signet Corporation. Consolidation of coal slurry. 4,208,188, Cl. 44-10.00R.
Dickens, James W.; McGinnis, James P.; and Zylstra, Henry J., to Square D Company. Circuit breaker having an electronic fault sensing and trip initiating unit. 4,208,693, Cl. 361-94.000.
Dickey, Avis M., to Dickey, Inc. Frame with convertible easel support. 4,207,694, Cl. 40-152.100.
Dickey, Inc.: *See*—
Dickey, Avis M., 4,207,694, Cl. 40-152.100.
Diefendorf, Russell J.; and Riggs, Dennis M., to Exxon Research & Engineering Co. Forming optically anisotropic pitches. 4,208,267, Cl. 208-22.000.
Dielectric Systems International: *See*—
Kalt, Charles G.; and Kalt, Thomas F., 4,208,103, Cl. 350-269.000.
Dietrich, Walter: *See*—
Aichert, Hans; Dietrich, Walter; Hauff, Alfred; Hoffmann, Otto-Horst; and Stephan, Herbert, 4,208,042, Cl. 266-242.000.
DiGirolamo, Joseph E.: *See*—
DiGirolamo, Mariam E.; and DiGirolamo, Joseph E., 4,207,673, Cl. 30-142.000.
DiGirolamo, Mariam E.; and DiGirolamo, Joseph E. Cuttlery. 4,207,673, Cl. 30-142.000.
Digital Equipment Corporation: *See*—
Hertrich, Friedrich R., 4,208,679, Cl. 360-77.000.
DiGuilio, Arnold O.: *See*—
Brown, Garrett; and DiGuilio, Arnold O., 4,208,028, Cl. 224-185.000.
Dijkstra, Hendrik: *See*—
Visser, Johannes; Oosthoek, Raoul H. J.; Groeneweg, Jan W.; and Dijkstra, Hendrik, 4,208,436, Cl. 426-104.000.
Diler, Engin: *See*—
Becker, Karl-Heinz; Knopfel, Hans-Dieter; Nicklas, Alexander; Hergt, Peter; and Diler, Engin, 4,208,169, Cl. 416-185.000.
Dill, Richard G. Marina siphon device. 4,208,172, Cl. 417-171.000.
Dinger, Hans; and Deutschmann, Herbert, to Motoren- und Turbinen-Union Friedrichshafen GmbH. Charging air heat-exchanger installation. 4,207,848, Cl. 123-122.00D.
Dingwall, Andrew G. F.; and Stewart, Roger G., to RCA Corporation. Precharge circuit for memory array. 4,208,730, Cl. 365-203.000.
Dingwall, John G.; Cook, Barry; and Marshall, Alan, to Ciba-Geigy Corporation. Phosphonosdipic acid additives to aqueous systems. 4,208,344, Cl. 260-502.40R.
Dischler, Helmut: *See*—
Huydts, Eduard J. C.; and Dischler, Helmut, 4,207,763, Cl. 72-454.000.
Dobrovolsky, Evgeny V.: *See*—
Babanin, Boris I.; Glyanchenko, Vladimir D.; Grechanichenko, Grigory M.; Erkin, Leonid I.; Litvin, Evgeny M.; Matskevich, Daniil D.; Nefedov, Petr Y.; Pankratiev, Oleg N.; Dobrovolsky, Evgeny V.; Petrukhno, Anatoly S.; and Frumkin, Vladlen M., 4,208,250, Cl. 201-10.000.
Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See*—
Sivers, Rolf V.; and Layher, Ulrich, 4,207,957, Cl. 180-70.00P.
Dommes, Werner; Hartl, Alfre; and Polzl, Hans-Werner, to Audinsu Auto Union AG. Engine with shuntable turbocharger. 4,207,742, Cl. 60-602.000.
Domtar Inc.: *See*—
Brouzes, Raymond J., 4,208,283, Cl. 210-50.000.
Donegan, James H.: *See*—
Garber, Samuel M., Jr.; and Donegan, James H., 4,208,734, Cl. 367-134.000.
Douchez, Jacques: *See*—
Bajon, Jean; Cattoen, Michel; Douchez, Jacques; and Morucci, Jean-Pierre, 4,208,675, Cl. 358-93.000.
Douglas, George R.: *See*—
Thompson, John H.; and Douglas, George R., 4,208,737, Cl. 367-171.000.
Dover Corporation: *See*—
Kesterman, James E., 4,208,033, Cl. 251-90.000.
Dow Chemical Company, The: *See*—
Childress, David L.; Hayes, William V.; and Poppe, Richard L., 4,208,306, Cl. 252-456.000.
McKendry, Lennon H.; and Bland, Walter P., 4,208,514, Cl. 544-11.000.
Dow Corning Corporation: *See*—
Nicholson, William R., 4,208,388, Cl. 423-268.000.
Dragotta, Peter. Visual inspection apparatus. 4,207,974, Cl. 198-344.000.
Draper, Geoffrey R., to Lucas Industries Limited. Lamp reflector for a motor vehicle. 4,208,704, Cl. 362-297.000.
Dresser Industries, Inc.: *See*—
Sample, Thomas E., Jr., 4,208,285, Cl. 210-180.000.
Sorenson, Robert K., 4,207,658, Cl. 29-149.5PM.
Dressler, Wilfried: *See*—
August, Peter; Huber, Peter; Adler, Klaus; and Dressler, Wilfried, 4,208,319, Cl. 260-42.390.
Dromard, Adrien: *See*—
Costantini, Michel; Dromard, Adrien; Jouffret, Michel; and Nantermet, Roland, 4,208,536, Cl. 568-771.000.
Drouin, Claude, to Les Industries BFG Limitee. Door for pyrolytic range. 4,207,863, Cl. 126-198.000.
Drummond, Warren W., to PPG Industries, Inc. Apparatus for advancing strand material. 4,208,000, Cl. 226-171.000.
Du Pont of Canada, Limited: *See*—
Oughton, Richard W., 4,208,259, Cl. 204-180.00R.
Oughton, Richard W., 4,208,260, Cl. 204-180.00R.
Dugan, Edward J.: *See*—
Boyle, Malachy V.; and Dugan, Edward J., 4,208,543, Cl. 174-152.00R.
Dukane Corporation: *See*—
Martner, John G., 4,208,001, Cl. 228-1.00R.
Duncan, Farris N.: *See*—
Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 4,208,007, Cl. 229-31.00R.
Duncan, Zelmer L. Back pain reliever. 4,207,878, Cl. 128-67.000.
Dunham, Robert W.; McGinnis, James P.; and Zylstra, Henry J., to Square D Company. Circuit breaker having an electronic fault sensing and trip initiating unit. 4,208,689, Cl. 361-48.000.
Dunn, Larry P.: *See*—
Bate, Geoffrey; and Dunn, Larry P., 4,208,447, Cl. 427-48.000.
Du Pont de Nemours, E. I., and Company: *See*—
Chang, David C., 4,208,465, Cl. 428-416.000.
Fawzi, Maged M., 4,208,205, Cl. 71-118.000.
Kinney, George A., 4,208,366, Cl. 264-24.000.
Kring, Elbert V., 4,208,371, Cl. 422-61.000.
Smiley, Robert A., 4,208,329, Cl. 548-239.000.
Dupuis, Leo. Swivel caster having thread protection. 4,207,651, Cl. 16-41.000.
Duro-Test Corp.: *See*—
Strauss, Herbert S.; and Sheinberg, Lawrence, 4,208,614, Cl. 315-73.000.
Dusenbery, John F., to John Dusenbery Co., Inc. Turret winder for pressure-sensitive tape. 4,208,019, Cl. 242-56.00A.
Dutcher, Daniel P., to Champion International Corporation. Air freshener carton. 4,208,012, Cl. 239-57.000.
Dyett, Derek H., to Molins, Ltd. Cigarette making machine. 4,207,907, Cl. 131-84.00B.
Dynamic Toy Company, Inc.: *See*—
Boatman, Martin R.; Robertson, Phillip E.; and Gaughan, Martin M., 4,207,702, Cl. 46-74.00D.
E. R. Squibb & Sons, Inc.: *See*—
Sundeen, Joseph E.; and Hauck, Frederick P., 4,208,415, Cl. 424-263.000.
Szarka, Laszlo J.; and Eltz, Robert W., 4,208,481, Cl. 435-43.000.
Wade, Peter C.; and Kissick, Thomas P., 4,208,518, Cl. 544-62.000.
Easco Tools, Inc.: *See*—
Biszantz, Donald W., 4,208,148, Cl. 403-251.000.
Eastlund, Bernard J.; Wood, Charles H.; Couch, Robert W.; and Ury, Michael G., to Fusion Systems Corp. Method and apparatus for ultraviolet curing of three dimensional objects without rotation. 4,208,587, Cl. 250-492.00R.
Eastman Kodak Company: *See*—
Coney, Charles H., 4,208,467, Cl. 428-480.000.
Gardner, Sylvia A.; and Gysling, Henry J., 4,208,478, Cl. 430-616.000.
Harvey, Frederick W.; and Sethi, Gurdip S., 4,208,117, Cl. 354-275.000.
Morse, John E., 4,208,116, Cl. 354-275.000.
Ebauches S.A.: *See*—
Gharadjedaghi, Fereydoun; Ruedin, Yves; and Viennet, Rene, 4,207,671, Cl. 29-592.00R.
Ebert, Harry K., Jr., to Bell Telephone Laboratories, Incorporated. Alarm circuit to detect shorting of periodic signal source. 4,208,627, Cl. 324-102.000.
Ebina, Yoshio: *See*—
Maruhashi, Motokazu; Ebina, Yoshio; and Ohnishi, Kizo, 4,208,499, Cl. 526-202.000.
Ecomard, Andre; and Eyzat, Pierre, to Institut Francais du Petrole. Method and device for improving the operation of a supercharged engine. 4,207,743, Cl. 60-611.000.
Edahiro, Kenichi: *See*—
Kiga, Shotaro; Yoshida, Naoshi; Edahiro, Kenichi; and Sakata, Tadashi, 4,208,246, Cl. 162-106.000.
Edgar Pickering (Blackburn) Limited: *See*—
Bleasdale, Barrie, 4,207,825, Cl. 112-79.00R.
Edwards, John C., to Radiochemical Centre Limited, The. Assay of oestrogen. 4,208,400, Cl. 424-1.000.
Edwards, William J., to Singer Company, The. Throat plate with thread separator rib. 4,207,826, Cl. 112-184.000.
Egger, Helmut; and Reinshagen, Hellmuth, to Sandoz Ltd. Pleuromutilin esters. 4,208,326, Cl. 260-239.0BF.
Eghammer, Lars E.; and Ohlsson, Sven-Olof, to AB Volvo. Spot welding device. 4,208,566, Cl. 219-86.100.

Egli, Ernst, to Gebruder Buhler AG. Method and apparatus for injection molding foamed plastic articles using a pre-pressurized mold having fixed core members with controlled venting. 4,208,368, Cl. 264-45.500.

Egorov, Vladimir D.: *See*—
Pershin, Gennady D.; Zalyaljutdinov, Klim G.; Gimazetdinov, Rais F.; Egorov, Vladimir D.; and Schegolev, Gennady K., 4,207,928, Cl. 140-115.000.

Egyt Gyogyszervegyeszeti Gyar: *See*—
Rozsa, Laszlo; Petocz, Lujza; Grasser, Katalin; Kosoczky, Ibolya; Kiszelly, Eniko; and Nagy, Jozsef, 4,208,410, Cl. 424-244.000.

Ehrenthal, Irving; and Miner, Keith E., to Anheuser-Busch, Incorporated. Immobilization of glucose isomerase. 4,208,482, Cl. 435-178.000.

Ehrl, Hans-Peter: *See*—
Schwiecker, Horst; Thorn, Gernot; and Ehrl, Hans-Peter, 4,207,835, Cl. 118-664.000.

Eisai Co., Ltd.: *See*—
Minami, Norio; Kijima, Shizumasa; Katayama, Satoshi; and Shionoya, Hiroshi, 4,208,426, Cl. 424-283.000.

Eisenberg, Robert M., to Singer Company, The. Fast-$\rho\,\theta$ random access memory device. 4,208,721, Cl. 364-731.000.

Eklund, Mats F.; Kjoller, Hans O. S.; and Nyman, Anders B. J., to Telefonaktiebolaget L M Ericsson. Apparatus for giving priority to certain data signals. 4,208,714, Cl. 364-200.000.

Eldridge, William N., to Becton, Dickinson and Company. Blood sampling assembly having porous vent means vein entry indicator. 4,207,870, Cl. 128-766.000.

Electric Power Research Institute, Inc.: *See*—
Arand, John K.; Muzio, Lawrence J.; and Sotter, John G., 4,208,386, Cl. 423-235.000.
Cheo, Peter K.; and Cantor, Arnold J., 4,208,126, Cl. 356-51.000.

Electro-Craft Corporation: *See*—
Hipkins, Dennis R.; and Schiedermayer, Marvin L., 4,208,621, Cl. 318-138.000.

Elektrowatt AG: *See*—
Schmucki, Josef, 4,207,767, Cl. 73-363.000.

El Gammal, Tareh. Carrier body and method for introduction of a reaction agent into metal melts. 4,208,207, Cl. 75-130.00R.

Eli Lilly and Company: *See*—
Archer, Robert A.; and Day, William A., 4,208,351, Cl. 568-327.000.
Chauvette, Robert R., 4,208,515, Cl. 544-16.000.
Hamill, Robert L.; and Hoehn, Marvin M., 4,208,403, Cl. 424-115.000.
Paget, Charles J.; and Sands, John L., 4,208,419, Cl. 424-270.000.
Schinitsky, Michael R., 4,208,414, Cl. 424-262.000.
Zimmerman, Dennis M.; and Marshall, Winston S., 4,208,524, Cl. 546-144.000.

Ellis, administrator by Ira N. J.: *See*—
Ellis, Doyce F., Sr. deceased; and Ellis, administrator by Ira N. J., 4,207,993, Cl. 221-256.000.

Ellis, Doyce F., Sr. deceased; and Ellis, administrator by Ira N. J. Cricket dispenser. 4,207,993, Cl. 221-256.000.

Elsbett, Gunter: *See*—
Elsbett, Ludwig; and Elsbett, Gunter, 4,207,808, Cl. 92-158.000.

Elsbett, Ludwig; and Elsbett, Gunter. Piston for reciprocating internal combustion engines, typically diesel engines. 4,207,808, Cl. 92-158.000.

Eltz, Robert W.: *See*—
Szarka, Laszlo J.; and Eltz, Robert W., 4,208,481, Cl. 435-43.000.

eMDee Corporation: *See*—
Ruben, Samuel; and Kalker, Philip E., 4,207,766, Cl. 73-301.000.

Emmert, Richard L.: *See*—
Postupack, Dennis S.; Allerton, David A.; and Emmert, Richard L., 4,208,446, Cl. 430-124.000.

Endo, Hidetoshi, to Feather Kogyo Kabushiki Kaisha. Knife holder for microtomes. 4,207,790, Cl. 83-698.000.

Endo, Kiichi: *See*—
Yamaguchi, Hachiro; Noguchi, Tatsuhiko; and Endo, Kiichi, 4,208,216, Cl. 106-74.000.

Endo, Makoto; and Kusahara, Kohji, to Nissan Chemical Industries, Limited. Process for producing aqueous solution of calcium nitrite. 4,208,391, Cl. 423-385.000.

Endo, Shin, to Toko Tokushu Densen Kabushiki Kaisha. Cable for particular use with loudspeakers. 4,208,542, Cl. 174-113.00C.

Energy Dynamics, Inc.: *See*—
Schwemin, Arnold J., 4,207,774, Cl. 74-42.000.

English Clays Lovering Pochin & Company Limited: *See*—
Lofthouse, Charles H.; Bell, David G.; and Phillips, Leyland R., 4,208,277, Cl. 209-223.00A.

Enomoto, Shogo: *See*—
Sawai, Masanobu; Sudo, Tadamitsu; and Enomoto, Shogo, 4,208,185, Cl. 23-230.00B.

Epstein, Max: *See*—
Meiri, Samuel; Kot, Casey; Rogers, B. H. Gerald; and Epstein, Max, 4,207,872, Cl. 128-4.000.

Erikson, J. Alden: *See*—
Chang, Wen-Hsuan; Erikson, J. Alden; and Porter, Samuel, Jr., 4,208,494, Cl. 525-440.000.
Chang, Wen-Hsuan; Erikson, J. Alden; and Porter, Samuel, Jr., 4,208,495, Cl. 525-440.000.

Eriquez, Louis A.: *See*—
D'Amato, Richard F.; and Eriquez, Louis A., 4,208,480, Cl. 435-34.000.

Erkin, Leonid I.: *See*—
Babanin, Boris I.; Glyanchenko, Vladimir D.; Grechanichenko, Grigory M.; Erkin, Leonid I.; Litvin, Evgeny M.; Matskevich, Daniil D.; Nefedov, Petr Y.; Pankratiev, Oleg N.; Dobrovolsky, Evgeny V.; Petrukhno, Anatoly S.; and Frumkin, Vladlen M., 4,208,250, Cl. 201-10.000.

Ernst, Edwin R.: *See*—
Robbins, Max L.; and Ernst, Edwin R., 4,208,385, Cl. 423-226.000.

Errede, Louis A.; and Ronning, Patricia M., to Minnesota Mining and Manufacturing Company. Plant nourishment delivery device. 4,207,705, Cl. 47-48.500.

Esaki, Leo: *See*—
Chang, Leroy L.; Esaki, Leo; and Sai-Halasz, George A., 4,208,667, Cl. 357-16.000.

Esch, Heinz: *See*—
Nauroth, Peter; Esch, Heinz; Kuhlmann, Robert; Bode, Rudolf; Reisert, Arthur; Buhler, Harald; and Turk, Gunter, 4,208,316, Cl. 260-37.0SB.

Estep, Jess: *See*—
Yago, Jeffrey R., 4,208,004, Cl. 228-173.00D.

Etat Francais: *See*—
Canteloup, Jean; Mocellin, Alain M.; Braguier, Michel A.; and Tueta, Roger J., 4,207,834, Cl. 118-620.000.

Etcheverria, Jean-Michel; Lazarre, Flavien; and Poujol, Pierre, to Societe Nationale Elf Aquitaine (Production). Device for dispersing a residual gas comprising a plurality of injection nozzles. 4,208,195, Cl. 55-159.000.

Etcheverria, Jean-Michel: *See*—
Bimond, Jean-Pierre; Etcheverria, Jean-Michel; Lazarre, Flavien; and Veron, Andre, 4,207,806, Cl. 92-31.000.

Ethicon, Inc.: *See*—
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,208,511, Cl. 528-272.000.

Ethyl Corporation: *See*—
Malec, Robert E., 4,208,190, Cl. 44-53.000.
Zaweski, Edward F., 4,208,293, Cl. 252-51.50A.

Etscheid, Hermann, to Hermann Etscheid oHG. Arrangement for controlling the addition of a liquid. 4,208,219, Cl. 134-57.00R.

Euteco S.p.A.: *See*—
Formaro, Leonardo; Cavalli, Luciano; Gellera, Artemio; and Fraschini, Marco, 4,208,253, Cl. 204-1.00T.

Evans, David N.; Moore, Walter W.; and Ng, Jean L., to General Foods Corporation. Composition for use in preparing a baked coated comestible. 4,208,442, Cl. 426-296.000.

Evatt, Humphry R.: *See*—
Lloyd, John W.; Wild, David E.; and Evatt, Humphry R., 4,207,897, Cl. 128-303.100.

Exbrayat, Pierre E.; and Schutz, Richard A., to Agence Nationale de Valorization de la Recherche (ANVAR); and Agence Nationale de Valorisation de la Recherche (A.N.V.A.R.). Method and apparatus for coating textile strands or threads for use in hoisery or weaving. 4,207,729, Cl. 57-296.000.

Exner, Gerhard; and Festinori, Volfango, to Kraftwerk Union Aktiengesellschaft. Device for turning a nut means on a screw bolt. 4,207,784, Cl. 81-54.000.

Expansia: *See*—
Demosthene, Claude G.; and Aspisi, Christian R., 4,208,354, Cl. 568-3.000.

Exxon Research & Engineering Co.: *See*—
Baker, Richard H., 4,208,711, Cl. 363-136.000.
Blume, John H.; Bushnell, James D.; and Leighton, Milton D., 4,208,382, Cl. 423-210.000.
Chianelli, Russell R., 4,208,394, Cl. 423-561.00R.
Diefendorf, Russell J.; and Riggs, Dennis M., 4,208,267, Cl. 208-22.000.
Gardner, Irwin J., 4,208,491, Cl. 525-254.000.
Gladrow, Elroy M.; and Wheelock, Kenneth S., 4,208,269, Cl. 208-120.000.
Jacobson, Allan J.; and Silbernagel, Bernard G., 4,208,474, Cl. 429-191.000.
Lundberg, Robert D.; Bock, Jan; and Makowski, Henry S., 4,208,310, Cl. 260-23.50A.
Patton, Tad L., 4,208,486, Cl. 521-89.000.
Robbins, Max L.; and Ernst, Edwin R., 4,208,385, Cl. 423-226.000.

Eyelet Specialty Co., Inc.: *See*—
Idec, Eric J.; Klimeck, Edward F.; and Hultgren, Eric A., 4,208,144, Cl. 401-192.000.

Eyzat, Pierre: *See*—
Ecomard, Andre; and Eyzat, Pierre, 4,207,743, Cl. 60-611.000.

Fahey, Darryl R., to Phillips Petroleum Company. Catalyst system for producing ethylene polymers. 4,208,304, Cl. 252-429.00C.

Fairmont Foods Company: *See*—
Kanuch, George M.; and Staff, Charles H., 4,208,443, Cl. 426-331.000.

Falcetta, Joseph J.: *See*—
Deichert, William G.; Falcetta, Joseph J.; and Su, Kai C., 4,208,362, Cl. 264-1.000.

Fang, Russell J. F.: *See*—
Lu, Shyue-Ching; Lee, Lin-nan; and Fang, Russell J. F., 4,208,739, Cl. 375-2.000.

Farmer, Cloyd C., to Brunswick Corporation. Multi-conductor insulation stripping apparatus. 4,207,782, Cl. 81-9.510.

Farr, Eric. Simulated golf ball. 4,208,053, Cl. 273-199.00R.

Fawzi, Maged M., to Du Pont de Nemours, E. I., and Company. Herbicidal benzamides. 4,208,205, Cl. 71-118.000.

Fayet, Philippe: *See—*
Groult, Alain M. M.; Tournier, Herve N.; and Fayet, Philippe, 4,208,505, Cl. 528-30.000.

Fazakerly, William B.; and Hafeman, Daniel R., to Scientific Micro Systems, Inc. Active filter and phase-locked loop using same. 4,208,635, Cl. 331-17.000.

Feather Kogyo Kabushiki Kaisha: *See—*
Endo, Hidetoshi, 4,207,790, Cl. 83-698.000.

Fedders Corporation: *See—*
Daily, Thomas E., 4,207,686, Cl. 34-133.000.

Feinauer, Roland: *See—*
Horlbeck, Gernot; Burzin, Klaus; and Feinauer, Roland, 4,208,527, Cl. 528-279.000.

Felt, Eugene D.: *See—*
Bowden, Murrae J. S.; Felt, Eugene D.; Thompson, Larry F.; and Wilkins, Cletus W., Jr., 4,208,211, Cl. 430-314.000.

Festinori, Volfango: *See—*
Exner, Gerhard; and Festinori, Volfango, 4,207,784, Cl. 81-54.000.

Fichtel & Sachs AG: *See—*
Naumann, Karlheinz, 4,208,648, Cl. 338-99.000.

Fike, Lester L., Jr., to Fike Metal Products Corporation. Low burst pressure corrosion resistant rupture disc assembly. 4,207,913, Cl. 137-68.00R.

Fike Metal Products Corporation: *See—*
Fike, Lester L., Jr., 4,207,913, Cl. 137-68.00R.

Finck, Karl-Julius: *See—*
Silber, Dieter; Fullman, Marius; Finck, Karl-Julius; and Winter, Wolfgang, 4,208,669, Cl. 357-38.000.

Finlayson, Claude M., to NL Industries, Inc. Viscosity increasing additive for non-aqueous fluid systems. 4,208,218, Cl. 106-287.250.

Fischer, George A.; Walter, Robert A.; and Melilli, Albert S., to General Electric Company. Damper. 4,207,864, Cl. 126-285.00R.

Fischer, Henning; and Leverentz, Gunter. Apparatus for charging photo-electrostatic semiconductor layers. 4,208,697, Cl. 361-229.000.

Fischer, Wolfgang: *See—*
Huber, Guntram; Hutai, Hubert; Klie, Wolfgang; and Fischer, Wolfgang, 4,208,069, Cl. 293-102.000.

Fitton, Peter; and Propper, Ronald, to Hoffmann-La Roches Inc. Process for preparation of α-tocopherol. 4,208,334, Cl. 260-345.500.

Flexible Design Packaging Machine Company: *See—*
D'Angelo, Joseph J.; and Maccherone, Lawrence, 4,207,667, Cl. 29-417.000.

Floyd, Roger M.: *See—*
Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 4,208,007, Cl. 229-31.00R.

Fluehmann, Werner, to Societe Suisse pour l'Industrie Horlogere Mangagement Services S.A. One way gear train. 4,207,777, Cl. 74-462.000.

FMC Corporation: *See—*
Berkowitz, Sidney, 4,208,519, Cl. 544-190.000.

Ford Motor Company: *See—*
Rao, Vemulapalli D. N.; Jaimee, Angelo; and Howes, Benjamin T., 4,207,660, Cl. 29-156.4WL.

Formaro, Leonardo; Cavalli, Luciano; Gellera, Artemio; and Fraschini, Marco, to Euteco S.p.A. Method for measuring the concentration of sodium in a flow of mercury-sodium amalgam. 4,208,253, Cl. 204-1.00T.

Forney Engineering Company: *See—*
Horn, Robert, 4,208,650, Cl. 371-47.000.

Fory, Werner: *See—*
Tobler, Hans; Fory, Werner; and Schurter, Rolf, 4,208,202, Cl. 71-88.000.

Foster, Michael R., to General Motors Corporation. Catalytic converter. 4,208,374, Cl. 422-179.000.

Foster Transformers Limited: *See—*
Garnham, Martin H. F.; and Bennell, Frank T., 4,208,709, Cl. 363-90.000.

Fouad, M. Taher A., to Kelatron Pharmaceutical Division of Intermountain Laboratories Inc. Trace element composition for iron deficiency anemia. 4,208,405, Cl. 424-177.000.

Fourcadier, Chantal: *See—*
Grollier, Jean F.; and Fourcadier, Chantal, 4,208,183, Cl. 8-409.000.

Fournier, Roger H., to Warner & Swasey Company, The. Workpiece positioning apparatus. 4,207,710, Cl. 51-237.0CS.

Fox, Robert W. Apparatus for making color slides from black-and-white art using regular and color film rolls. 4,208,124, Cl. 355-32.000.

Foxton, Michael W.; Gregory, Gordon I.; and Rogers, David M., to Glaxo Operations UK Limited. Caphalosporin compounds having at position-7 an α-etherified hydroxyiminoarylacetamido group. 4,208,517, Cl. 544-28.000.

Franklin Enterprises, Inc.: *See—*
Davies, Philip H.; and Lohning, Franklin M., 4,208,158, Cl. 414-22.000.

Franks, C. Richard, deceased: *See—*
Lewis, David L.; Schenker, Barry A.; Suchanski, Mary R.; and Franks, C. Richard, deceased, 4,208,450, Cl. 427-126.300.

Frantzreb, John G., Sr.; and Reinhart, Daniel J., to Caterpillar Tractor Co. Welding method using a break away flux dam. 4,208,563, Cl. 219-73.000.

Fraschini, Marco: *See—*
Formaro, Leonardo; Cavalli, Luciano; Gellera, Artemio; and Fraschini, Marco, 4,208,253, Cl. 204-1.00T.

Fraser, Charles E. O. Coat conditioning method and composition for dogs and cats. 4,208,429, Cl. 424-312.000.

Frassanito, John R.: *See—*
Coleman, Bobby W.; Frassanito, John R.; Norman, Richard O.; and Parke, James G., 4,208,013, Cl. 239-351.000.

Freitag, Dieter: *See—*
Schmidt, Manfred; Cohnen, Wolfgang; Kleiner, Frank; Freitag, Dieter; and Idel, Karsten, 4,208,489, Cl. 525-146.000.

French, Charles R.: *See—*
Hall, Wilbur L.; French, Charles R.; Wu, Ching H.; and Brown, Alfred, 4,207,945, Cl. 166-272.000.

Friebel, Virgil R.; Roller, Kent G.; and Deitrick, Jack L., to Ball Corporation. Static electricity indicator. 4,208,629, Cl. 324-457.000.

Friedman, Nathan: *See—*
Kelly, Robert E.; and Friedman, Nathan, 4,207,984, Cl. 206-554.000.

Friello, Dominick R.; Witzel, Frank; Clark, K. Warren; and Mackay, Donald A. M., to Life Savers, Inc. Long-lasting chewing gum having good processibility and method. 4,208,431, Cl. 426-3.000.

Fritz, Gerald D.: *See—*
Bugler, Thomas W., III; and Fritz, Gerald D., 4,208,359, Cl. 261-111.000.

Frost, Lawrence W., to Westinghouse Electric Corp. 2,4 Diamino benzonitrile. 4,208,343, Cl. 260-465.00E.

Frumkin, Vladlen M.: *See—*
Babanin, Boris I.; Glyanchenko, Vladimir D.; Grechanichenko, Grigory M.; Erkin, Leonid I.; Litvin, Evgeny M.; Matskevich, Daniil D.; Nefedov, Petr Y.; Pankratiev, Oleg N.; Dobrovolsky, Evgeny V.; Petrukhno, Anatoly S.; and Frumkin, Vladlen M., 4,208,250, Cl. 201-10.000.

Fryatt, Leslie A. Seals. 4,208,059, Cl. 277-153.000.

Fryer Corporation: *See—*
Fryer, George R., 4,208,565, Cl. 219-78.150.

Fryer, George R., to Fryer Corporation. Welding machine for banding material. 4,208,565, Cl. 219-78.150.

Fuji Photo Film Co., Ltd.: *See—*
Sakai, Tadao; and Kawai, Masayoshi, 4,208,210, Cl. 430-140.000.

Fujiki, Norio; Baba, Kousaku; and Mimura, Akitoshi, to Nissan Motor Company, Limited. Radar-operated vehicle safety assurance system. 4,208,658, Cl. 343-7.0VM.

Fujimoto, Isao; Kasubuchi, Takeshi; and Sumitomo, Yuji, to Sharp Kabushiki Kaisha. Carriage position control in a printer of the carriage traveling mode. 4,208,139, Cl. 400-126.000.

Fujino, Takashi: *See—*
Sai, Fumio; and Fujino, Takashi, 4,208,295, Cl. 252-94.000.

Fujita, Masanao; Sugawara, Toshiaki; and Oosaki, Keizo, to Kabushiki Kaisha Meiji Gomu Kasei. Method of regeneration of plastics material by removing outer deteriorated layer. 4,208,015, Cl. 241-16.000.

Fukasawa, Noburu: *See—*
Sugasawa, Fukashi; Fukasawa, Noburu; Iizuka, Haruhiko; and Mumura, Akitoshi, 4,207,856, Cl. 123-198.00F.

Fukawa, Isaburo; Satake, Kunio; Yamada, Tsuyoshi; Hayakawa, Kiyoshi; and Sato, Yasushi, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing mixture of block copolymers. 4,208,356, Cl. 525-89.000.

Fukui, Kiyozumi. Crawler type vehicle driving apparatus. 4,207,804, Cl. 91-499.000.

Fuller Company: *See—*
Kline, Kenneth H.; and Kramer, Walter W., 4,207,682, Cl. 34-57.00A.

Fullman, Marius: *See—*
Silber, Dieter; Fullman, Marius; Finck, Karl-Julius; and Winter, Wolfgang, 4,208,669, Cl. 357-38.000.

Furst, Garry: *See—*
Kronfeld, Jerome; and Furst, Garry, 4,207,977, Cl. 206-361.000.

Furuta, Kenzi: *See—*
Sato, Masanobu; Satoh, Ken; Nakao, Toshihiro; and Furuta, Kenzi, 4,208,686, Cl. 360-137.000.

Fusion Systems Corp.: *See—*
Eastlund, Bernard J.; Wood, Charles H.; Couch, Robert W.; and Ury, Michael G., 4,208,587, Cl. 250-492.00R.

G.A.O. Gesellschaft fur Automation und Organisation mbH: *See—*
Hoppe, Joachim; Haghiri-Tehrani, Yahya; and Gauch, Wolfgang, 4,208,231, Cl. 156-247.000.

G. D. Searle & Co.: *See—*
Yonan, Peter K., 4,208,327, Cl. 260-239.30R.

G. Siempelkamp GmbH & Co.: *See—*
Huydts, Eduard J. C.; and Dischler, Helmut, 4,207,763, Cl. 72-454.000.

Gabhart, Terry L.: *See—*
Kitchen, John P.; and Gabhart, Terry L., 4,207,634, Cl. 5-255.000.

GAF Corporation: *See—*
Nahta, Roop C., 4,208,485, Cl. 521-65.000.

Gallagher, Don R.: *See—*
Jones, Bernard H.; Cox, Daniel; and Gallagher, Don R., 4,208,016, Cl. 242-18.00G.

Gallaher Limited: *See—*
McLoughlin, Robert W.; and Nuttall, Colin P., 4,208,578, Cl. 250-214.0AG.

Gammon, Charles T., to Diamond Shamrock Corporation. Microemulsion defoamer compositions and processes for their production and use. 4,208,301, Cl. 252-321.000.

Garber, Samuel M., Jr.; and Donegan, James H., to General Electric Company. Underwater communication system. 4,208,734, Cl. 367-134.000.

Gardner, Irwin J., to Exxon Research & Engineering Co. Graft curing of elastomers with adsorbed monomers. 4,208,491, Cl. 525-254.000.

Gardner, James H.; and de Nevers, Noel H., to Oros Company. Countercurrent solid-to-solid heat transfer apparatus and method. 4,207,943, Cl. 165-1.000.
Gardner, Lloyd E., to Phillips Petroleum Company. Oxidation process for alkylaromatics. 4,208,352, Cl. 568-431.000.
Gardner, Sylvia A.; and Gysling, Henry J., to Eastman Kodak Company. Tellurium(II) photographic materials. 4,208,478, Cl. 430-616.000.
Garin, Vadim A.: *See—*
Belyakov, Viktor P.; Gustov, Vilgelm F.; Step, Khaim Y.; Garin, Vadim A.; Orlov, Valentin K.; Kortikov, Viktor S.; Prokofieva, Nina A.; Terushkina, Anna E.; and Vinogradova, Ljudmila B., 4,208,360, Cl. 261-114.00R.
Garlock Inc.: *See—*
Messenger, Edward J., 4,208,057, Cl. 277-37.000.
Garnham, Martin H. F.; and Bennell, Frank T., to Foster Transformers Limited. Rectifiers. 4,208,709, Cl. 363-90.000.
Gasbarro, Geno N. Automatic wing cutting apparatus. 4,207,653, Cl. 17-11.000.
Gauch, Wolfgang: *See—*
Hoppe, Joachim; Haghiri-Tehrani, Yahya; and Gauch, Wolfgang, 4,208,231, Cl. 156-247.000.
Gaughan, Martin M.: *See—*
Boatman, Martin R.; Robertson, Phillip E.; and Gaughan, Martin M., 4,207,702, Cl. 46-74.00D.
Gebruder Buhler AG: *See—*
Egli, Ernst, 4,208,368, Cl. 264-45.500.
Gelenkwellenbau GmbH: *See—*
Napierala, Gunter, 4,208,150, Cl. 403-338.000.
Gelens, Johannes R.: *See—*
Roelevink, Bauke J.; and Gelens, Johannes R., 4,208,700, Cl. 362-10.000.
Gelesic, Antun: *See—*
Kampfenkel, Ottomar; and Gelesic, Antun, 4,207,751, Cl. 62-141.000.
Gellera, Artemio: *See—*
Formaro, Leonardo; Cavalli, Luciano; Gellera, Artemio; and Fraschini, Marco, 4,208,253, Cl. 204-1.00T.
Gelsing, Winfried; and Nolzen, Hans-Martin, to Oschatz GmbH. Internally cooled workpiece-support grate. 4,208,179, Cl. 432-234.000.
General Atomic Company: *See—*
Hawke, Basil C.; and Goldman, Lewis A., 4,207,723, Cl. 53-281.000.
Norman, John H., 4,208,396, Cl. 423-579.000.
General Electric Company: *See—*
Anderson, Harold G., 4,208,608, Cl. 313-279.000.
Armor, Anthony F.; Darby, William L.; Archibald, James B.; and Landrio, Frank R., 4,208,599, Cl. 310-64.000.
Berlec, Ivan, 4,208,609, Cl. 313-315.000.
Bochan, John, 4,207,760, Cl. 68-18.0FA.
Boyle, Malachy V.; and Dugan, Edward J., 4,208,543, Cl. 174-152.00R.
Cline, Harvey E.; Anthony, Thomas R.; and Giaever, Ivar, 4,207,670, Cl. 29-576.00C.
Fischer, George A.; Walter, Robert A.; and Melilli, Albert S., 4,207,864, Cl. 126-285.00R.
Garber, Samuel M., Jr.; and Donegan, James H., 4,208,734, Cl. 367-134.000.
Graves, James A.; and Pikus, Francis W., 4,208,603, Cl. 313-1.000.
Gray, Steven J., 4,208,559, Cl. 200-329.000.
Harmon, Thomas F.; and Sobieski, John C., 4,208,645, Cl. 337-297.000.
Hatch, Burton D., 4,207,778, Cl. 74-572.000.
Hatch, Burton D., 4,208,600, Cl. 310-178.000.
Lavallee, Francois A.; and Pritschau, Raymond H., 4,208,328, Cl. 548-180.000.
Lawrence, George J.; and Kronsberg, Herbert E., 4,208,085, Cl. 339-103.00C.
McVey, Charles I.; and Datta, Ranajit K., 4,208,605, Cl. 313-221.000.
Morris, Jesse L., 4,207,812, Cl. 101-4.000.
Rabatin, Jacob G., 4,208,470, Cl. 428-328.000.
Shueh, Samuel B.; and Williams, Louis C., 4,207,753, Cl. 62-285.000.
Stoner, Larry W., 4,207,929, Cl. 141-1.000.
Tomson, James M., 4,207,930, Cl. 141-1.000.
Tomson, James M.; and Bohde, Richard C., 4,207,931, Cl. 141-1.000.
Tucker, James W.; and Peck, Robert A., 4,208,170, Cl. 416-221.000.
Wanger, Robert P., 4,208,550, Cl. 370-113.000.
Wotowiec, Joseph P., 4,208,702, Cl. 362-217.000.
General Foods Corporation: *See—*
Evans, David N.; Moore, Walter W.; and Ng, Jean L., 4,208,442, Cl. 426-296.000.
General Foods, Limited: *See—*
Murray, E. Donald; Maurice, Terrence J.; Barker, Larry D.; and Myers, Chester D., 4,208,323, Cl. 260-112.00G.
General Motors Corporation: *See—*
Atkins, Terrance J.; Cronin, James D.; and Hogeman, Robert L., 4,208,358, Cl. 261-50.00R.
Auman, John T.; Mennucci, Donald F.; and Ricketts, James B., Jr., 4,208,266, Cl. 204-195.00S.
Bakewicz, Frank J.; Bouchard, Patrick M.; and Pringle, Patrick W., 4,208,568, Cl. 219-86.310.
Bradley, Thompson G., 4,208,473, Cl. 429-112.000.
Foster, Michael R., 4,208,374, Cl. 422-179.000.
Jones, Billy R.; and Sheridan, John J., 4,208,615, Cl. 315-83.000.
Reed, James R.; Way, Terrance; and Leal, Richard A., 4,208,454, Cl. 427-238.000.
Sprague, Richard L., 4,208,554, Cl. 200-19.0DR.
Yakimowich, Peter; and Verkerke, Paul E., 4,208,197, Cl. 55-315.000.
General Refractories Company: *See—*
Stein, Joseph L.; Russell, George A., Jr.; and Mortl, Gunther L., 4,208,214, Cl. 106-56.000.
General Tire & Rubber Company, The: *See—*
Holmes, Richard G., 4,208,456, Cl. 428-63.000.
Georg Fischer AG: *See—*
Toedtli, Sergej, 4,207,712, Cl. 51-434.000.
Georgiev, Georgi T.: *See—*
Jordanov, Jordan T.; Abrashev, Georgi I.; Jekov, Velyu D.; Georgiev, Georgi T.; Haralampiev, Georgi A.; Janev, Janco H.; and Prodanov, Velcho A., 4,208,041, Cl. 266-196.000.
Geosource, Inc.: *See—*
Lockett, James F.; Mehrkam, Thomas O.; and Braham, Richard R. M., 4,207,985, Cl. 209-564.000.
Geren, Keith E., to United States of America, Navy. Helicopter destroyer. 4,207,819, Cl. 102-18.0MS.
German, Kenneth R., to Burleigh Instruments, Inc. Laser apparatus. 4,208,636, Cl. 331-94.50P.
Geschwender, Robert C., to Concept Engineering, Inc. Leisure chair. 4,208,070, Cl. 297-118.000.
GFM Gesellschaft fu Fertigungstechnik und Maschinenbau Aktiengesellschaft: *See—*
Kralowetz, Bruno; and Blaimschein, Gottfried, 4,208,156, Cl. 409-165.000.
Gharadjedaghi, Fereydoun; Ruedin, Yves; and Viennet, Rene, to Ebauches S.A. Method of manufacture of a passive electro-optic display cell having an helicoidal nematic liquid crystal and passive electro-optic display cell obtained by carrying out this method. 4,207,671, Cl. 29-592.00R.
Ghormley, Lidia S. Baffle device for face tent. 4,207,888, Cl. 128-203.290.
Giaever, Ivar: *See—*
Cline, Harvey E.; Anthony, Thomas R.; and Giaever, Ivar, 4,207,670, Cl. 29-576.00C.
Giardini, Dante S. System for repairing panes of glass. 4,208,229, Cl. 156-94.000.
Giege, Sture; and Lagerqvist, Torgny C. B., to Sandvik Aktiebolag. Variably tensioned roll-to-shaft clamping means. 4,208,147, Cl. 29-117.000.
Gifford, Richard L., to Brunswick Corporation. Self-centering bail for fishing reel. 4,208,020, Cl. 242-84.20G.
Gil-Bar Trailer Corporation: *See—*
Baker, Edward S.; and Barnett, Gilbert L., 4,208,063, Cl. 280-445.000.
Gilberts, Alexander G., to Reliable Electric Company. Line protector. 4,208,694, Cl. 361-119.000.
Gilden, Meyer: *See—*
Cheo, Peter K.; and Gilden, Meyer, 4,208,091, Cl. 350-96.130.
Gillette Company, The: *See—*
Bresak, Ann F.; and Tolgyesi, Eva, 4,208,471, Cl. 428-447.000.
Gillette, Robert H., to Brammall, Inc. Piston ring honing. 4,207,708, Cl. 51-67.000.
Gilmore, Cecilia; and Miller, Donald E., to SCM Corporation. Whippable topping mix. 4,208,444, Cl. 426-570.000.
Gilmour, Alfred J. Automatic filler tube and bell flushing. 4,207,932, Cl. 141-90.000.
Gimazetdinov, Rais F.: *See—*
Pershin, Gennady D.; Zalyaljutdinov, Klim G.; Gimazetdinov, Rais F.; Egorov, Vladimir D.; and Schegolev, Gennady K., 4,207,928, Cl. 140-115.000.
Girrell, Carol A., to Airco, Inc. Heat treatment processes utilizing H_2O additions. 4,208,224, Cl. 148-16.500.
Giuffre, Luigi; Spaziante, Placido M.; Pozzi, Vittorio; and Modica, Giovanni, to Oronzio deNora Impianti Elettrochimici S.p.A. Method of shaping an organic polymer insoluble in a polar solvent. 4,208,455, Cl. 427-341.000.
Giurtino, Joel F., to Cobe Laboratories, Inc. Fluid valve. 4,207,923, Cl. 137-625.470.
Givaudan Corporation: *See—*
Huber, Ulrich; and Wild, Hans J., 4,208,338, Cl. 260-347.800.
Givner, Morris L., to American Home Products Corporation. Diagnostic test. 4,208,187, Cl. 23-230.00B.
Gladrow, Elroy M.; and Wheelock, Kenneth S., to Exxon Research & Engineering Co. Hydrocarbon cracking using combined perovskite and zeolite catalyst. 4,208,269, Cl. 208-120.000.
Gladstein, Leo A.; Love, Robert D.; and Martin, Larry C., to International Business Machines Corporation. Substrate generator. 4,208,595, Cl. 307-297.000.
Glardon, Remi: *See—*
Kurz, Wilfried; and Glardon, Remi, 4,208,225, Cl. 148-101.000.
Glaxo Operations UK Limited: *See—*
Foxton, Michael W.; Gregory, Gordon I.; and Rogers, David M., 4,208,517, Cl. 544-28.000.
Glenn, William E., Jr., to New York Institute of Technology. Optical display apparatus. 4,208,096, Cl. 350-96.250.
Global Marine, Inc.: *See—*
Wetmore, Sherman B.; and Person, Abraham, 4,208,290, Cl. 210-460.000.

Glyanchenko, Vladimir D.: *See*—
Babanin, Boris I.; Glyanchenko, Vladimir D.; Grechanichenko, Grigory M.; Erkin, Leonid I.; Litvin, Evgeny M.; Matskevich, Daniil D.; Nefedov, Petr Y.; Pankratiev, Oleg N.; Dobrovolsky, Evgeny V.; Petrukhno, Anatoly S.; and Frumkin, Vladlen M., 4,208,250, Cl. 201-10.000.

Goldman, Lewis A.: *See*—
Hawke, Basil C.; and Goldman, Lewis A., 4,207,723, Cl. 53-281.000.

Goldsmith Yamasaki Specht: *See*—
Hadwiger, Kenneth E., 4,208,105, Cl. 350-306.000.

Goldstein, Amnon: *See*—
Markkanen, Carl O.; Benson, William G.; and Goldstein, Amnon, 4,208,009, Cl. 235-475.000.

Gomes, John M.; O'Keefe, Daniel A.; and McAlexander, Richard M., to United States of America, Interior. Froth flotation using lanolin modifier. 4,208,275, Cl. 209-167.000.

Gondouin, Michel. System, tooling and method of construction of cryogenic tanks for LNG tankers and for LNG storage. 4,207,827, Cl. 114-74.00A.

Gorbunov, Gennady S.: *See*—
Popov, Jury S.; Gorbunov, Gennady S.; Skachkov, Jury V.; and Badrukhin, Jury I., 4,208,598, Cl. 310-64.000.

Gorin, Everett, to Continental Oil Company. Removal of sulfur dioxide from flue gas. 4,208,395, Cl. 423-567.00A.

Gottling, Helmut, to WABCO Westinghouse GmbH. Stopping device for double-acting, pneumatic operating cylinders. 4,207,803, Cl. 91-410.000.

Gould Inc.: *See*—
Latos, Thomas S., 4,208,240, Cl. 156-627.000.
Lecklider, Thomas H., 4,208,723, Cl. 364-900.000.

Goupil, Georges A.: *See*—
Delebecque, Robert P.; Goupil, Georges A.; and Velte, Andre J., 4,208,619, Cl. 318-4.000.

Grabovac, Bosko, to Consolidated Devices Inc. Torque wrench. 4,207,783, Cl. 81-52.500.

Granges Weda AB: *See*—
Sieurin, Sven I., 4,208,043, Cl. 266-275.000.

Grasser, Katalin: *See*—
Rozsa, Laszlo; Petocz, Lujza; Grasser, Katalin; Kosoczky, Ibolya; Kiszelly, Eniko; and Nagy, Jozsef, 4,208,410, Cl. 424-244.000.

Graveline, Lionel: *See*—
Aubin, Jean-Marie; Graveline, Lionel; and Rioux, Leonard, 4,207,966, Cl. 182-181.000.

Graves, James A.; and Pikus, Francis W., to General Electric Company. Electric lamp having improved inlead construction. 4,208,603, Cl. 313-1.000.

Gravisse, Philippe E. Photoluminescent materials and method of manufacturing same. 4,208,300, Cl. 252-301.330.

Gray, Stanley; and McCormick, John A., to Mechanical Technology Incorporated. Compliant hydrodynamic bearing with improved support element. 4,208,076, Cl. 308-9.000.

Gray, Steven J., to General Electric Company. Switch actuating device and method of assembling. 4,208,559, Cl. 200-329.000.

Grechanichenko, Grigory M.: *See*—
Babanin, Boris I.; Glyanchenko, Vladimir D.; Grechanichenko, Grigory M.; Erkin, Leonid I.; Litvin, Evgeny M.; Matskevich, Daniil D.; Nefedov, Petr Y.; Pankratiev, Oleg N.; Dobrovolsky, Evgeny V.; Petrukhno, Anatoly S.; and Frumkin, Vladlen M., 4,208,250, Cl. 201-10.000.

Greenberg, Lawrence J.: *See*—
Hyman, Gregory E.; and Greenberg, Lawrence J., 4,207,696, Cl. 40-473.000.

Greene, Ronald W. Constant power density electrode adapted to be useful in bio-medical applications. 4,207,904, Cl. 128-798.000.

Greenlees, Kevin J.: *See*—
Oloff, Clarence M.; Buehring, Willi J.; and Greenlees, Kevin J., 4,207,889, Cl. 128-213.00R.

Greenwood, Philip R. Container opening device. 4,207,781, Cl. 81-3.46R.

Gregg, Roland S., Jr., to Bunker Ramo Corporation. Precision timing source for multiple rate sampling of high-speed waveforms. 4,208,626, Cl. 324-77.00A.

Gregorian, Razmic S.; and Namboodri, Chettoor G., to United Merchants and Manufacturers, Inc. Method for treating fabrics. 4,208,173, Cl. 427-296.000.

Gregory, Gordon I.: *See*—
Foxton, Michael W.; Gregory, Gordon I.; and Rogers, David M., 4,208,517, Cl. 544-28.000.

Greis, Howard A.; and Bruinsma, Robert F., to Kinefac Corp. Double end metal turning. 4,207,785, Cl. 82-2.00R.

Grieve, Donald F.; and Hochscheid, Robert E., to Krebs Engineers. Hydrocyclone assembly. 4,208,270, Cl. 209-211.000.

Grifith, Jerry: *See*—
Hadwiger, Kenneth E., 4,208,105, Cl. 350-306.000.

Groeneweg, Jan W.: *See*—
Visser, Johannes; Oosthoek, Raoul H. J.; Groeneweg, Jan W.; and Dijkstra, Hendrik, 4,208,436, Cl. 426-104.000.

Grollier, Jean F.; and Fourcadier, Chantal, to L'Oreal. Process for improving the storage stability of indole dyestuffs. 4,208,183, Cl. 8-409.000.

Groult, Alain M. M.; Tournier, Herve N.; and Fayet, Philippe, to Centre National d'Etudes Spatiales. Heterocyclic aromatic polymers of the polyimidazopyrrolone class, their prepolymers and their preparation. 4,208,505, Cl. 528-30.000.

Grow Group, Inc.: *See*—
Keithler, William R., 4,208,452, Cl. 427-204.000.

Grumman Aerospace Corporation: *See*—
August, Arthur; and Huber, John G., 4,208,238, Cl. 156-510.000.

Grushow, Gerald. Change of direction sensing mechanism. 4,207,770, Cl. 73-517.00R.

GTE Laboratories Incorporated: *See*—
Zampiello, Pamela, 4,208,242, Cl. 156-659.100.

GTE Products Corporation: *See*—
Brun, Craig W.; and Hand, Wilfred L., 4,208,741, Cl. 455-180.000.

GTE Service Corporation: *See*—
Kleiner, Richard N.; and Mehalchick, Emil J., 4,208,215, Cl. 106-73.300.
Vanderpool, Clarence D., 4,208,461, Cl. 428-207.000.

Guarino, Lottie G.: *See*—
Guarino, Rocco M.; and Guarino, Lottie G., 4,208,157, Cl. 409-218.000.

Guarino, Rocco M.; and Guarino, Lottie G. Snap-on indicator holder kit. 4,208,157, Cl. 409-218.000.

Guicheteau, Eugene H., to Honeywell Inc. Power monitor for use in starting and stopping a digital electronic system. 4,208,594, Cl. 307-200.00A.

Gulf Research & Development Co.: *See*—
Hoffmann, Otto L., 4,208,203, Cl. 71-95.000.

Gulf Seal Corporation: *See*—
Dial, Howard S., 4,208,469, Cl. 428-315.000.

Gulf & Western Manufacturing Company: *See*—
Snaper, Alvin A.; and Zulauf, Gary B., 4,208,643, Cl. 335-52.000.

Gundy, William P. Core drill. 4,208,154, Cl. 408-204.000.

Gustin, Pol A. G. J.: *See*—
Schayes, Raymond G. G.; and Gustin, Pol A. G. J., 4,208,677, Cl. 358-280.000.

Gustov, Vilgelm F.: *See*—
Belyakov, Viktor P.; Gustov, Vilgelm F.; Step, Khaim Y.; Garin, Vadim A.; Orlov, Valentin K.; Kortikov, Viktor S.; Prokofieva, Nina A.; Terushkina, Anna E.; and Vinogradova, Ljudmila B., 4,208,360, Cl. 261-114.00R.

Gyorik, Joseph J. Magazine for an automatic weapon. 4,207,797, Cl. 89-34.000.

Gysling, Henry J.: *See*—
Gardner, Sylvia A.; and Gysling, Henry J., 4,208,478, Cl. 430-616.000.

Haada, Seiki: *See*—
Hom-ma, Yoshio; Nozawa, Hisao; Sato, Akira; and Haada, Seiki, 4,208,257, Cl. 204-129.650.

Haans, Petrus F. A.: *See*—
van Esdonk, Johannes; and Haans, Petrus F. A., 4,207,656, Cl. 29-25.140.

Haas, Robert N.; and Mazzini, Carl A., to Singer Company, The. Simulator complex data transmission method and system. 4,207,687, Cl. 35-12.00R.

Haberer, Klaus; Klen, Han-Ulrich; and Normann, Sabine. Method of producing active filters more particularly for the treatment of water and waste water. 4,208,281, Cl. 210-36.000.

Haberli, Roland; Mollet, Hans; and Tempel, Christel, to Ciba-Geigy Corporation. Process for agglomerating a substance from a liquid system. 4,208,370, Cl. 264-117.000.

Hadwiger, Kenneth E., to Grifith, Jerry; and Goldsmith Yamasaki Specht, part interest to each. Reflective device and method for viewing one's own facial areas. 4,208,105, Cl. 350-306.000.

Hafeman, Daniel R.: *See*—
Fazakerly, William B.; and Hafeman, Daniel R., 4,208,635, Cl. 331-17.000.

Hagen, Siegfried H.: *See*—
Knippenberg, Wilhelmus F.; Verspui, Gerrit; and Hagen, Siegfried H., 4,208,449, Cl. 427-101.000.

Haggard, Richard A.: *See*—
Lewis, Sheldon N.; and Haggard, Richard A., 4,208,313, Cl. 260-29.60R.

Haghiri-Tehrani, Yahya: *See*—
Hoppe, Joachim; Haghiri-Tehrani, Yahya; and Gauch, Wolfgang, 4,208,231, Cl. 156-247.000.

Hahn, Hans H.: *See*—
Pretorius, Victor; and Hahn, Hans H., 4,208,284, Cl. 210-65.000.

Hahn, Jo A.: *See*—
Hahn, W. James, Jr.; and Hahn, Jo A., 4,208,054, Cl. 273-258.000.

Hahn, Norbert: *See*—
Hipp, Steven J.; and Hahn, Norbert, 4,208,161, Cl. 414-401.000.

Hahn, W. James, Jr.; and Hahn, Jo A. Game board having concentric and radial movement paths. 4,208,054, Cl. 273-258.000.

Haines, Eugene F. Latch control for explosion relief panel. 4,207,706, Cl. 49-141.000.

Halcon Research and Development Corporation: *See*—
Rashkin, Jay A., 4,208,539, Cl. 568-814.000.

Hall, John B.: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,208,297, Cl. 252-174.110.
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,208,296, Cl. 252-174.110.

Hall, Wilbur L.; French, Charles R.; Wu, Ching H.; and Brown, Alfred, to Texaco Inc. Recovering petroleum from subterranean formations. 4,207,945, Cl. 166-272.000.

Hallett, Robert J.: *See*—
Yin, Huo-Bing; and Hallett, Robert J., 4,208,740, Cl. 375-30.000.

Haltmar, Warren C.; and Lacey, Elsa S., to Texaco Inc. Tertiary recovery process. 4,207,946, Cl. 166-274.000.

Haltof, Garry P., to Valmet Corporation. Credit card or check validator. 4,208,575, Cl. 235-380.000.

Hamalainen, Matti J.; Rastas, Jussi K.; Tiitinen, Heikki A.; and Niemi, Tom O., to Outokumpu Oy. Process for the recovery of cobalt from its impure, aqueous, in particular nickel-bearing, solutions and catalyst therefor. 4,208,380, Cl. 423-143.000.

Hamanaka, Nobuyuki: *See*—
Kurono, Masayasu; Hamanaka, Nobuyuki; Sakuyama, Shigeru; Chiba, Takeshi; and Nakai, Hisao, 4,208,428, Cl. 424-305.000.

Hamill, Robert L.; and Hoehn, Marvin M., to Eli Lilly and Company. A-21978 Antibiotics and process for their production. 4,208,403, Cl. 424-115.000.

Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Ink roller and method of making same. 4,207,818, Cl. 101-348.000.

Hammar, Walton J.; and Rustad, Mark A., to Riker Laboratories, Inc. Diphenylbenzofuran compounds. 4,208,337, Cl. 260-346.220.

Hammar, Walton J.: *See*—
Scherrer, Robert A.; Hammar, Walton J.; and Stern, Richard M., 4,208,335, Cl. 260-346.220.

Hampton, Richard; and Hanes, P. Frank, Jr., to Carolon Company. Woven elastic compression bandage. 4,207,885, Cl. 128-156.000.

Hand, Wilfred L.: *See*—
Brun, Craig W.; and Hand, Wilfred L., 4,208,741, Cl. 455-180.000.

Hane, Yoshio; and Chino, Nobuo, to Taisei Kensetsu Kabushiki Kaisha. Automatic reader of processing condition data for articles to be processed in an automatic processing system. 4,208,576, Cl. 235-452.000.

Hanes, P. Frank, Jr.: *See*—
Hampton, Richard; and Hanes, P. Frank, Jr., 4,207,885, Cl. 128-156.000.

Hanks, Lincoln. Solar energy collector and method. 4,207,867, Cl. 126-447.000.

Hansel, Gernot: *See*—
Reibetanz, Wilbert; Sigg, Horst; Wiesner, Herbert; Wanner, Karl; Hansel, Gernot; Seitz, Karl; and Bleicher, Manfred, 4,207,953, Cl. 175-209.000.

Hansen, Donald M.: *See*—
Patel, Amrut R.; and Hansen, Donald M., 4,208,556, Cl. 200-148.00E.

Hansen, Robert N., to Avrea, Walter C.; Martin, Ben; and Kovacic, Thomas, a part interest to each. Coupling guard. 4,208,065, Cl. 280-507.000.

Haralampiev, Georgi A.: *See*—
Jordanov, Jordan T.; Abrashev, Georgi I.; Jekov, Velyu D.; Georgiev, Georgi T.; Haralampiev, Georgi A.; Janev, Janco H.; and Prodanov, Velcho A., 4,208,041, Cl. 266-196.000.

Hargreaves, William W.: *See*—
Spence-Bate, Harry A. H.; and Hargreaves, William W., 4,208,119, Cl. 354-322.000.

Harmon, Thomas F.; and Sobieski, John C., to General Electric Company. Fuse employing oriented plastic and a conductive layer. 4,208,645, Cl. 337-297.000.

Harrison, Boyd L., to Richardson-Merrell Inc. 7-(1,3-Dithiolan-2-imino)-Δ^2-cephalosporanic acid derivatives. 4,208,516, Cl. 544-17.000.

Harrison, Herman W., to Texas Instruments Incorporated. Calculator with algebraic operating system. 4,208,720, Cl. 364-709.000.

Harshbarger, William R.; Levinstein, Hyman J.; Mogab, Cyril J.; and Porter, Roy A., to Bell Telephone Laboratories, Incorporated. Device fabrication by plasma etching. 4,208,241, Cl. 156-643.000.

Hart, Douglas R. S. Solar collector construction. 4,207,869, Cl. 126-450.000.

Hartl, Alfre: *See*—
Dommes, Werner; Hartl, Alfre; and Polzl, Hans-Werner, 4,207,742, Cl. 60-602.000.

Harvey, Frederick W.; and Sethi, Gurdip S., to Eastman Kodak Company. Film packet. 4,208,117, Cl. 354-275.000.

Hase, Takashi; Kagami, Akiyasu; Mimura, Yoshiyuki; Narita, Kinichiro; and Hiraki, Minoru, to Dai Nippon Toryo Co., Ltd. Low-velocity electron excited fluorescent display device. 4,208,612, Cl. 313-495.000.

Hase, Takashi; Kagami, Akiyasu; Mimura, Yoshiyuki; Narita, Kinichiro; and Hiraki, Minoru, to Dai Nippon Toryo Co., Ltd. Low-velocity electron excited fluorescent display device. 4,208,613, Cl. 313-495.000.

Hashimoto, Mashayuki, to Yamaha Hatsudoki Kabushiki Kaisha. Engine mounting for motorcycles. 4,207,960, Cl. 180-228.000.

Hashino, Yasuo; Hayano, Fusakazu; and Ito, Kenji, to Asahi Kasei Kogyo Kabushiki Kaisha. Semipermeable membranes of polyaryl ether sulfones. 4,208,508, Cl. 528-175.000.

Hatch, Burton D., to General Electric Company. Reinforced cross-ply composite flywheel and method for making same. 4,207,778, Cl. 74-572.000.

Hatch, Burton D., to General Electric Company. Disk/drum acyclic machine. 4,208,600, Cl. 310-178.000.

Hatchett, Michael R., to International Business Machines Corporation. Cartridge type record player having a three position holder. 4,208,681, Cl. 360-97.000.

Hattori, Tadashi; Kobashi, Mamoru; Kawase, Tooro; and Ueno, Yoshiki, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Electronic ignition control apparatus. 4,207,847, Cl. 123-117.00R.

Hauber, Peter F., to Reflectolite Products, Inc. Sliding door lock. 4,208,068, Cl. 292-126.000.

Hauck, Frederick P.: *See*—
Sundeen, Joseph E.; and Hauck, Frederick P., 4,208,415, Cl. 424-263.000.

Hauff, Alfred: *See*—
Aichert, Hans; Dietrich, Walter; Hauff, Alfred; Hoffmann, Otto-Horst; and Stephan, Herbert, 4,208,042, Cl. 266-242.000.

Hauni-Werke Korber & Co., KG.: *See*—
Tolasch, Gerhard; Schubert, Bernhard; and Menge, Gunter, 4,207,720, Cl. 53-151.000.

Hawke, Basil C.; and Goldman, Lewis A., to Gençral Atomic Company. Canning and inspection system for nuclear reactor fuel and reflector elements. 4,207,723, Cl. 53-281.000.

Hayakawa, Kiyoshi: *See*—
Fukawa, Isaburo; Satake, Kunio; Yamada, Tsuyoshi; Hayakawa, Kiyoshi; and Sato, Yasushi, 4,208,356, Cl. 525-89.000.

Hayano, Fusakazu: *See*—
Hashino, Yasuo; Hayano, Fusakazu; and Ito, Kenji, 4,208,508, Cl. 528-175.000.

Hayashi, Hisao, to Kabushiki Kaisha Kawaguchiya Hayashi Juho Kayaku-Ten. Gas operating system for loading shot shell in an automatic gun. 4,207,798, Cl. 89-191.00R.

Hayashi, Tadayoshi: *See*—
Mase, Yoshio; Hayashi, Tadayoshi; Natsuume, Shinichi; Kobayashi, Yasuhisa; and Moriya, Yoshiyuki, 4,207,661, Cl. 29-157.00R.

Hayes, Cecil, to W. M. Still & Sons Limited. Tap. 4,207,916, Cl. 137-171.000.

Hayes, William V.: *See*—
Childress, David L.; Hayes, William V.; and Poppe, Richard L., 4,208,306, Cl. 252-456.000.

Hazumi, Kenji; Tanaka, Tsutomu; and Tagami, Katsutoshi, to Sawafuji Electric Co. Ltd.; and Honda Giken Kogyo Kabushiki Kaisha. Voltage regulating device for power generating system. 4,208,710, Cl. 363-96.000.

Hearon, William M.; and Lo, Cheng F., to Boise Cascade Corporation. Separating phenols from alkaline pulping spent liquors. 4,208,350, Cl. 568-324.000.

Hechinger, Al. Wheel for skateboards and roller skates. 4,208,073, Cl. 301-5.300.

Hechtl, Wolfgang: *See*—
Hockemeyer, Friedrich; Hechtl, Wolfgang; Marwitz, Heinrich; and Hittmair, Paul, 4,208,504, Cl. 528-15.000.

Hedaya, Eddie; Kwiatkowski, George T.; Peters, Edward N.; and Stewart, Donald D., to Union Carbide Corporation. High molecular weight carborane-siloxane block copolymers and method for their preparation. 4,208,492, Cl. 525-389.000.

Heenan, Sidney A., to Amerace Corporation. Reflector structure. 4,208,090, Cl. 350-61.000.

Heerema, Pieter S.: *See*—
Horowitz, Alexandre; Heerema, Pieter S.; and Willemsen, Henricus P., 4,207,828, Cl. 114-125.000.

Heine, Thomas H., to Westinghouse Electric Corp. Compact single-ended fluorescent lamp. 4,208,618, Cl. 315-324.000.

Heinen, Harold J.; Peterson, David G.; and Lindstrom, Roald E., to United States of America, Interior. Desorption of gold from activated carbon. 4,208,378, Cl. 423-27.000.

Helma GmbH & Co. KG: *See*—
Hufenreuter, Wolfgang, 4,208,127, Cl. 356-244.000.

Helt, Raymond E.; and Davis, Stanley M., to Rass, Inc. Adjustable emergency fan belt. 4,207,776, Cl. 74-235.000.

Hemphill, Charles W. Backhoe bucket adapter bushing and pin method and apparatus. 4,207,693, Cl. 37-195.000.

Hensley, Wayne A. Gun rest construction. 4,207,699, Cl. 42-94.000.

Henss, Heinrich, to VDO Adolf Schindling AG. Indicator instrument, particularly for vehicles. 4,207,768, Cl. 73-431.000.

Hergt, Peter: *See*—
Becker, Karl-Heinz; Knopfel, Hans-Dieter; Nicklas, Alexander; Hergt, Peter; and Diler, Engin, 4,208,169, Cl. 416-185.000.

Herman, Rodney W. Cigarette package. 4,207,976, Cl. 206-246.000.

Hermann Etscheid oHG: *See*—
Etscheid, Hermann, 4,208,219, Cl. 134-57.00R.

Hermans, Hubert K. Fr.: *See*—
Sanczuk, Stefan; and Hermans, Hubert K. Fr., 4,208,418, Cl. 424-267.000.

Heronema, Joseph D. Wall scraping tool with bowed blade. 4,207,674, Cl. 30-169.000.

Herrmann, Wolfgang; and Satzinger, Gerhard, to Warner-Lambert Company. Process for the preparation of thiazolidin-4-one-acetic acid derivatives. 4,208,526, Cl. 546-209.000.

Hertrich, Friedrich R., to Digital Equipment Corporation. Transducer positioning system for rotating disk drive units. 4,208,679, Cl. 360-77.000.

Heyne, Clarence A., to Owens-Illinois, Inc. Apparatus for forming and applying plastic sleeves to glass bottles. 4,208,237, Cl. 156-446.000.

Highstreet, Edward J.: *See*—
Stannard, Forrest B.; and Highstreet, Edward J., 4,208,288, Cl. 210-277.000.

Hilkenmeier, Juergen: *See*—
Volke, Hans-Werner; and Hilkenmeier, Juergen, 4,208,138, Cl. 400-124.000.

Hiltebrandt, Siegfried; and Wurster, Helmut, to Richard Wolf GmbH. Gas insufflation apparatus. 4,207,887, Cl. 128-207.280.

Hily, Claude: *See*—
Hunzinger, Jean-Jacques; and Hily, Claude, 4,208,088, Cl. 350-31.000.

Hinote, Gary L. Selective real estate display systems. 4,208,109, Cl. 353-15.000.

Hipkins, Dennis R.; and Schiedermayer, Marvin L., to Electro-Craft Corporation. Brushless DC motor control system. 4,208,621, Cl. 318-138.000.

Hipp, Steven J.; and Hahn, Norbert, to Rite-Hite Corporation. Device for releasably securing a vehicle to an adjacent support. 4,208,161, Cl. 414-401.000.

Hirabayashi, Teruhiko; and Wassen, Willem J., to Nittetu Chemical Engineering Ltd. (NICE); and Stamicarbon, B.V. Process for the recovery of ammonia and sulphur dioxide from a contaminated ammonium salt of sulphuric acid. 4,208,390, Cl. 423-356.000.

Hiraga, Yoichi; and Kikuchi, Mitsuo, to Toyo Soda Manufacturing Company, Limited. Purification of phosphoric acid. 4,208,389, Cl. 423-321.00S.

Hirai, Kazuo: *See*—
Takata, Yataro; Takenoshita, Yukinori; Sasahara, Kiyoshi; Shigaki, Akira; Hirai, Kazuo; Maeda, Kosei; Tadokuro, Hideo; and Maeda, Hirokazu, 4,207,807, Cl. 92-128.000.

Hiraki, Minoru: *See*—
Hase, Takashi; Kagami, Akiyasu; Mimura, Yoshiyuki; Narita, Kinichiro; and Hiraki, Minoru, 4,208,612, Cl. 313-495.000.
Hase, Takashi; Kagami, Akiyasu; Mimura, Yoshiyuki; Narita, Kinichiro; and Hiraki, Minoru, 4,208,613, Cl. 313-495.000.

Hirano, Noboru: *See*—
Imaizumi, Masao; Yasuda, Mitsuo; Sakata, Ko; and Hirano, Noboru, 4,208,540, Cl. 585-809.000.

Hitachi Denshi Kabushiki Kaisha: *See*—
Suzuki, Toshiro, 4,208,641, Cl. 333-217.000.

Hitachi, Ltd.: *See*—
Hom-ma, Yoshio; Nozawa, Hisao; Sato, Akira; and Haada, Seiki, 4,208,257, Cl. 204-129.650.
Isahaya, Fumio; and Yukitake, Tugihiro, 4,208,381, Cl. 423-210.000.
Misumi, Akira; and Kumada, Masaharu, 4,208,208, Cl. 75-170.000.
Nakazato, Norio; Saho, Norihide; Yoshimatsu, Sachihiro; and Okabe, Michimasa, 4,208,199, Cl. 62-29.000.
Nate, Kazuo; Kotsuka, Kyoko; and Isogai, Tokio, 4,208,005, Cl. 228-175.000.
Nonaka, Yasuhiko, 4,207,836, Cl. 118-664.000.
Suzuki, Toshiro, 4,208,641, Cl. 333-217.000.
Wada, Takeshi; Kita, Hisanao; Okuni, Tetsuo; and Namatame, Yoshio, deceased, 4,208,564, Cl. 219-73.100.
Yasugahira, Norio; Sato, Takeshi; and Tsubouchi, Kuniyoshi, 4,208,167, Cl. 415-217.000.

Hittmair, Paul: *See*—
Hockemeyer, Friedrich; Hechtl, Wolfgang; Marwitz, Heinrich; and Hittmair, Paul, 4,208,504, Cl. 528-15.000.

Hochscheid, Robert E.: *See*—
Grieve, Donald F.; and Hochscheid, Robert E., 4,208,270, Cl. 209-211.000.

Hockemeyer, Friedrich; Hechtl, Wolfgang; Marwitz, Heinrich; and Hittmair, Paul, to Wacker-Chemie GmbH. Adhesive repellent coatings and substrates coated therewith. 4,208,504, Cl. 528-15.000.

Hoechst Aktiengesellschaft: *See*—
Kraft, Kurt; Walz, Gerd; and Wirth, Thaddaus, 4,208,488, Cl. 525-107.000.

Hoehn, Marvin M.: *See*—
Hamill, Robert L.; and Hoehn, Marvin M., 4,208,403, Cl. 424-115.000.

Hoesch Werke Aktiengesellschaft: *See*—
Dahlhaus, Peter; Simon, Willi; and Striepeke, Wilhelm, 4,208,011, Cl. 238-281.000.

Hoffken, Erich; Kleine-Kleffmann, Werner; Bertram, Rolf; Abele, Karl-Heinz; and Michalski, Gunter, to Thyssen Aktiengesellschaft vormals August Thyssen-Hutte. Device for dividing a strand into slabs. 4,208,039, Cl. 266-50.000.

Hoffman-La Roche Inc.: *See*—
Kubiatowicz, David O.; and Bolles, Theodore F., 4,208,398, Cl. 424-1.000.

Hoffmann, James E.: *See*—
Beseke, Kermit M.; Hoffmann, James E.; and Kopecki, Ronald J., 4,208,631, Cl. 455-92.000.

Hoffmann, Kurt; and Sigusch, Reiner, to Siemens Aktiengesellschaft. One-transistor storage element and a process for the production thereof. 4,208,670, Cl. 357-45.000.

Hoffmann-La Roche Inc.: *See*—
Coffen, David L., 4,208,535, Cl. 562-430.000.
Cohen, Noal; and Saucy, Gabriel, 4,208,331, Cl. 260-340.90R.
Cohen, Noal; and Saucy, Gabriel, 4,208,332, Cl. 260-340.90R.
Cohen, Noal, 4,208,333, Cl. 260-345.500.
Kienzle, Frank; and Rosen, Perry, 4,208,533, Cl. 560-122.000.

Hoffmann-La Roches Inc.: *See*—
Fitton, Peter; and Propper, Ronald, 4,208,334, Cl. 260-345.500.

Hoffmann, Otto-Horst: *See*—
Aichert, Hans; Dietrich, Walter; Hauff, Alfred; Hoffmann, Otto-Horst; and Stephan, Herbert, 4,208,042, Cl. 266-242.000.

Hoffmann, Otto L., to Gulf Research & Development Co. Method of protecting corn from herbicides. 4,208,203, Cl. 71-95.000.

Hofstatter, Alfred F., to Superior Industries. Method of painting aluminum surfaces. 4,208,223, Cl. 148-6.200.

Hogeman, Robert L.: *See*—
Atkins, Terrance J.; Cronin, James D.; and Hogeman, Robert L., 4,208,358, Cl. 261-50.00R.

Hoke, Donald I., to Lubrizol Corporation, The. The process for preparing phosphorus and sulfur containing amides and thioamides. 4,208,357, Cl. 260-978.000.

Hokkeling, Pieter; and Van den Plas, Roger J. Q., to U.S. Philips Corporation. Electric lamp with tin or lead alloy plug for lead-in. 4,208,607, Cl. 313-332.000.

Holdiman, Joseph W.; and Justice, Douglas E., to Lancer Corporation. Metal cladded window products. 4,207,707, Cl. 49-501.000.

Hollis Engineering, Inc.: *See*—
Comerford, Matthias F.; Munroe, Thomas N.; and O'Rourke, Harold T., 4,208,002, Cl. 228-37.000.

Holloway, Thomas M.; Janu, George J.; Laakaniemi, Richard N.; and Lederman, Warren A., to Johnson Controls, Inc. Fluid relay apparatus. 4,207,914, Cl. 137-85.000.

Holmes, Richard G., to General Tire & Rubber Company, The. Repair of FRP parts. 4,208,456, Cl. 428-63.000.

Holmqvist, Bo H., to Renholmens Mekaniska Verkstad AB. Automatic quick-coupling device. 4,208,163, Cl. 414-723.000.

Holtz, Maurice; Singh, Krishna P.; and Soler, Alan I., to Joseph Oat Corporation. Heat exchanger for withstanding cyclic changes in temperature. 4,207,944, Cl. 165-82.000.

Holzel, Martin: *See*—
Wanner, Karl; Schmid, Wolfgang; and Holzel, Martin, 4,208,058, Cl. 277-153.000.

Hom-ma, Yoshio; Nozawa, Hisao; Sato, Akira; and Haada, Seiki, to Hitachi, Ltd. Method of forming an interconnection. 4,208,257, Cl. 204-129.650.

Homuth, Kenneth C. Single directional sealing piston ring. 4,207,800, Cl. 91-26.000.

Homuth, Kenneth C. Hydraulic cylinder with improved dashpot and porting. 4,207,802, Cl. 91-405.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Hazumi, Kenji; Tanaka, Tsutomu; and Tagami, Katsutoshi, 4,208,710, Cl. 363-96.000.
Mase, Yoshio; Hayashi, Tadayoshi; Natsuume, Shinichi; Kobayashi, Yasuhisa; and Moriya, Yoshiyuki, 4,207,661, Cl. 29-157.00R.

Honda Motor Co. Ltd.: *See*—
Kubo, Akira; Todoroki, Nobuaki; Teshima, Yasuhiko; Kuranami, Nobuo; Tsutsui, Nobukazu; and Kasai, Akio, 4,208,262, Cl. 204-181.00T.

Honeywell Inc.: *See*—
Guicheteau, Eugene H., 4,208,594, Cl. 307-200.00A.
Killpatrick, Joseph E.; and Ormsby, Ralph D., 4,208,024, Cl. 244-3.150.

Honeywell Information Systems Inc.: *See*—
Porter, Marion G.; Shelly, William A.; and Norman, Robert W., Jr., 4,208,716, Cl. 364-200.000.

Honigmann, Gunter: *See*—
Turk, Herbert; Honigmann, Gunter; Martens, Gerhard; and Schewe, Lothar, 4,208,560, Cl. 219-10.49R.

Hoover Universal, Inc.: *See*—
Kitchen, John P.; and Gabhart, Terry L., 4,207,634, Cl. 5-255.000.

Hoppe, Joachim; Haghiri-Tehrani, Yahya; and Gauch, Wolfgang, to G.A.O. Gesellschaft fur Automation und Organisation mbH. Method of making multilayer edge-sealed record carrier. 4,208,231, Cl. 156-247.000.

Hori, Ryuzo; Uchida, Kiyoshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; and Wakisaka, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Oxygen sensor element and process of manufacture. 4,208,265, Cl. 204-195.00S.

Horie, Takashi: *See*—
Satake, Toshihiko; Yanagihara, Hiromichi; and Horie, Takashi, 4,208,274, Cl. 209-44.200.

Horiuchi, Tomofusa: *See*—
Ushijima, Takashi; Iwasa, Yoshio; and Horiuchi, Tomofusa, 4,208,361, Cl. 261-121.00B.

Horlbeck, Gernot; Burzin, Klaus; and Feinauer, Roland, to Chemische Werke Huls, Aktiengesellschaft. Process for the manufacture of high molecular weight poly-(ethylene terephthalate). 4,208,527, Cl. 528-279.000.

Horn, Dale W.; and Wickline, William A., to Orion Industries, Inc. Omnidirectional, vertically polarized antenna. 4,208,662, Cl. 343-792.000.

Horn, Robert, to Forney Engineering Company. Data transmission system. 4,208,650, Cl. 371-47.000.

Horowitz, Alexandre; Heerema, Pieter S.; and Willemsen, Henricus P., to Varitrac AG. Stabilizing system for a crane vessel. 4,207,828, Cl. 114-125.000.

Horton, Roberta J. Clothes dryer. 4,207,683, Cl. 34-60.000.

Horwitz, E. Philip; and Mason, George W., to United States of America, Energy. Process for recovering actinide values. 4,208,377, Cl. 423-8.000.

Hoskinson, William R., to Wurlitzer Company, The. Tri-state encoding circuit for electronic musical instrument. 4,207,792, Cl. 84-1.010.

Hoskinson, William R.: *See*—
Ippolito, Anthony C.; and Hoskinson, William R., 4,207,793, Cl. 84-1.240.

Hosoya, Nobukazu, to Sanyo Electric Co., Ltd. Switching regulated power supply apparatus. 4,208,705, Cl. 363-19.000.

Howe, Robert K.; and Liu, Kou-Chang, to Monsanto Company. Preparation of 3-aryl-isoxazol-5-yl benzoates. 4,208,510, Cl. 548-247.000.

Howell, Robert V., to Robert Howell Industries. Wet disc friction device. 4,207,969, Cl. 188-71.600.

Howes, Benjamin T.: *See*—
Rao, Vemulapalli D. N.; Jaimee, Angelo; and Howes, Benjamin T., 4,207,660, Cl. 29-156.4WL.

Howes, David R., executor: *See*—
Ledig, Kurt W., deceased; and Howes, David R., executor, 4,208,520, Cl. 544-250.000.

Howson, Edward H., to D & D Electric, Inc., a part interest. Bottle contents transfer device. 4,207,933, Cl. 141-106.000.

HPM Corporation: *See—*
Rosenbaum, Larry A., 4,208,175, Cl. 425-131.100.

Hruza, Denis E., Sr.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,208,297, Cl. 252-174.110.

Hsu, Jau Y., to Societe d'Assistance Technique Pour Produits Nestle S.A. Preparation of pasta. 4,208,439, Cl. 426-242.000.

Hubbard, S. Eugene, to Kawneer Company, Inc. System for improving heat insulating characteristics of existing curtain walls and the like. 4,207,717, Cl. 52-235.000.

Huber, Bernhard W., to Bodenseewerk Perkin-Elmer & Co., GmbH. Apparatus for generating and transferring a gaseous test sample to an atomic absorption spectrometer. 4,208,372, Cl. 422-65.000.

Huber, Guntram; Hutai, Hubert; Klie, Wolfgang; and Fischer, Wolfgang, to Daimler-Benz Aktiengesellschaft. Bumper-support body consisting of glass-fiber-reinforced synthetic plastic material. 4,208,069, Cl. 293-102.000.

Huber, John G.: *See—*
August, Arthur; and Huber, John G., 4,208,238, Cl. 156-510.000.

Huber, Peter: *See—*
August, Peter; Huber, Peter; Adler, Klaus; and Dressler, Wilfried, 4,208,319, Cl. 260-42.390.

Huber, Ulrich; and Wild, Hans J., to Givaudan Corporation. Cyano dihydro furanones. 4,208,338, Cl. 260-347.800.

Hufenreuter, Wolfgang, to Helma GmbH & Co. KG. Cuvette holder. 4,208,127, Cl. 356-244.000.

Huggett, Richard D. J.; and Cook, William, to Lewmar Marine Limited. Winch. 4,208,036, Cl. 254-150.00R.

Hughes Aircraft Company: *See—*
Andrews, H. Eugene, 4,207,769, Cl. 73-517.00A.
Moyer, Norman E., 4,207,734, Cl. 368-83.000.

Huliganga, Ernie F.: *See—*
Wang, Samuel S.; Smith, Eugene L., Jr.; and Huliganga, Ernie F., 4,208,487, Cl. 521-117.000.

Hultgren, Eric A.: *See—*
Idec, Eric J.; Klimeck, Edward F.; and Hultgren, Eric A., 4,208,144, Cl. 401-192.000.

Hunzinger, Jean-Jacques; and Hily, Claude, to U.S. Philips Corporation. Multi-axial optical objective for an optical read head in a facsimile system. 4,208,088, Cl. 350-31.000.

Hutai, Hubert: *See—*
Huber, Guntram; Hutai, Hubert; Klie, Wolfgang; and Fischer, Wolfgang, 4,208,069, Cl. 293-102.000.

Hutchinson, David W.: *See—*
Anderson, John C.; Hutchinson, David W.; Terchick, Alvin A.; and Wen, Wu-wey, 4,208,217, Cl. 106-97.000.

Hutton, Roger S., to Powell Industries, Inc. Digital fluid flow control system. 4,207,919, Cl. 137-487.500.

Huydts, Eduard J. C.; and Dischler, Helmut, to G. Siempelkamp GmbH & Co. Screw press. 4,207,763, Cl. 72-454.000.

Hydroacoustics Inc.: *See—*
Bouyoucos, John V., 4,207,962, Cl. 181-119.000.

Hyler, John H.; Lott, Walter E.; and Johnson, Clifford E., to Westinghouse Air Brake Company. Four-wheel drive scraper with main propulsion at rear axle. 4,207,691, Cl. 37-124.000.

Hyler, John H.; Lott, Walter E.; and Johnson, Clifford E., to Westinghouse Air Brake Company. Two engine four-wheel drive scraper with main propulsion at rear axle. 4,207,692, Cl. 37-129.000.

Hyman, Gregory E.; and Greenberg, Lawrence J. Sound activated mobile. 4,207,696, Cl. 40-473.000.

Iacobucci, Guillermo A.; and Sweeny, James G., to Coca-Cola Company, The. Color stable food containing anthocyanic pigments and bio-available vitamin C and process for its production. 4,208,434, Cl. 426-72.000.

Ibel, Manfred. Combination toilet seat and bidet basin. 4,207,628, Cl. 4-445.000.

Ichikawa, Hiroshi; and Yakura, Masatake, to Yazaki Corporation. Apparatus for temporary stock dispenser of wire. 4,208,017, Cl. 242-47.010.

Ichikawa, Kiyotada. Emergency shut-off valve. 4,207,912, Cl. 137-39.000.

Ichioka, Satoshi: *See—*
Mitsumoto, Norio; Ichioka, Satoshi; and Takeuchi, Shinjiro, 4,208,254, Cl. 204-43.00T.

Idec, Eric J.; Klimeck, Edward F.; and Hultgren, Eric A., to Eyelet Specialty Co., Inc. Cosmetic applicator with transparent container portion. 4,208,144, Cl. 401-192.000.

Idel, Karsten: *See—*
Schmidt, Manfred; Cohnen, Wolfgang; Kleiner, Frank; Freitag, Dieter; and Idel, Karsten, 4,208,489, Cl. 525-146.000.

Iida Denki Kogyo Co., Ltd.: *See—*
Ohki, Yoshinori; and Komiya, Hirokichi, 4,207,852, Cl. 123-148.00E.

Iizima, Sigeru: *See—*
Matsuda, Akihisa; and Iizima, Sigeru, 4,208,637, Cl. 331-94.50C.

Iizuka, Haruhiko: *See—*
Sugasawa, Fukashi; Fukasawa, Noburu; Iizuka, Haruhiko; and Mumura, Akitoshi, 4,207,856, Cl. 123-198.00F.

Ikeda, Katsuzo; and Kitagawa, Ikuo, to Olympic Fishing Tackles Co., Ltd. Torque control device for an electrically-driven tool. 4,208,555, Cl. 200-52.00R.

Ikeda, Yoneichi: *See—*
Sasaki, Yutaka; Ikeda, Yoneichi; Tashiro, Masaharu; and Nakamura, Toshio, 4,208,303, Cl. 252-417.000.

Ikura, Katsuyata; Katsuura, Kiyoshi; Nakada, Akira; and Mizuno, Masami, to Nippon Soda Company Limited. Imidazole derivatives having fungicidal activity. 4,208,411, Cl. 424-245.000.

ILC Data Device Corporation: *See—*
Narasimhan, Tanjore R., 4,208,698, Cl. 361-414.000.

Illers, Karl H.: *See—*
Stutz, Herbert; Illers, Karl H.; and Schuster, Ludwig, 4,208,507, Cl. 528-64.000.

Illinois Tool Works Inc.: *See—*
McVey, John K.; and Luxon, Bruce A., 4,208,647, Cl. 337-404.000.

Imaizumi, Masao; Yasuda, Mitsuo; Sakata, Ko; and Hirano, Noboru, to Nippon Oil Co., Ltd. Process for separation and recovery of isobutene. 4,208,540, Cl. 585-809.000.

Imed Corporation: *See—*
Jenkins, Jon A., 4,207,871, Cl. 128-214.00R.

Imel, Margj: *See—*
Smith, Ruby E.; and Imel, Margj, 4,207,633, Cl. 5-90.000.

Imperial Chemical Industries Limited: *See—*
Cunningham, John A.; and Reade, Grahame M., 4,208,468, Cl. 428-315.000.

Impink, Albert J., Jr., to Westinghouse Electric Corp. Neutron source. 4,208,247, Cl. 176-19.00R.

Ingemann, Ole, to A/S Haustrup Plastic. Container with lid opening means. 4,207,989, Cl. 220-266.000.

Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,208,256, Cl. 204-129.200.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Fluid pumping control method and apparatus for machine tools. 4,208,256, Cl. 204-129.200.

Institut Francais du Petrole: *See—*
Cosyns, Jean; and Derrien, Michel, 4,208,271, Cl. 208-255.000.
Desbrandes, Robert, 4,208,731, Cl. 367-11.000.
Ecomard, Andre; and Eyzat, Pierre, 4,207,743, Cl. 60-611.000.
Nguyen Duc, Xuong, 4,207,639, Cl. 9-8.00P.

Institute of Gas Technology: *See—*
Klass, Donald L.; and Conrad, John R., 4,208,387, Cl. 423-243.000.

Insulation Distributors, Incorporated: *See—*
Burns, David; and Spicer, James R., 4,207,918, Cl. 137-375.000.

Integrated Sound Systems Inc.: *See—*
Klasco, Michael, 4,207,963, Cl. 181-147.000.

International Business Machines Corporation: *See—*
Bate, Geoffrey; and Dunn, Larry P., 4,208,447, Cl. 427-48.000.
Gladstein, Leo A.; Love, Robert D.; and Martin, Larry C., 4,208,595, Cl. 307-297.000.
Hatchett, Michael R., 4,208,681, Cl. 360-97.000.
Janssen, Donovan M.; Kellow, Raymond E., Sr.; Picker, William A.; and Radman, Anton J., Jr., 4,208,684, Cl. 360-104.000.
Kekas, Dennis H.; Lynch, Robert C.; Mathewson, James A.; McAdams, Ronald P.; and Pasterchick, Harry, Jr., 4,208,081, Cl. 339-31.00R.
Kleczkowski, Stawomir P., 4,208,683, Cl. 360-99.000.
Laman, William H., 4,208,678, Cl. 360-71.000.
Matla, Arno; Matthaei, Horst D.; and Zimmermann, Volker W., 4,208,685, Cl. 360-107.000.
Prado, Philip G.; Stuckey, Raymond L.; and Volles, Fredrick O., 4,208,079, Cl. 312-202.000.
Yin, Huo-Bing; and Hallett, Robert J., 4,208,740, Cl. 375-30.000.

International Flavors & Fragrances Inc.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,208,297, Cl. 252-174.110.
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,208,308, Cl. 252-522.00R.
Withycombe, Donald A.; Mookherjee, Braja D.; Vock, Manfred H.; and Vinals, Joaquin F., 4,207,905, Cl. 131-17.00R.
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,208,296, Cl. 252-174.110.

International Harvester Company: *See—*
Neitzel, Daniel R., 4,208,162, Cl. 414-686.000.

International Telephone and Telegraph Corporation: *See—*
Borsuk, Leslie M., 4,208,093, Cl. 350-96.200.

Ippolito, Anthony C.; and Hoskinson, William R., to Wurlitzer Company, The. Variable rate portamento system. 4,207,793, Cl. 84-1.240.

Irie, Hiromitsu; Tajima, Fumio; Kuribayashi, Nobuhide; and Isozaki, Kazuhisa, to Tokyo Shibaura Denki Kabushiki Kaisha; Nippon Genshiryoku Jigyo Kabushiki Kaisha; and Toshiba Engineering Kabushiki Kaisha, part interest to each. Process for treating radioactive liquid waste. 4,208,298, Cl. 252-301.10W.

Isaacson, Max. Pressure controlled breathing apparatus. 4,207,884, Cl. 128-200.240.

Isahaya, Fumio; and Yukitake, Tugihiro, to Hitachi, Ltd. Method and apparatus for cleaning waste flue gases. 4,208,381, Cl. 423-210.000.

Ishigaki, Hisao; and Tanaka, Ryuzo, to Citizen Watch Co., Ltd. Dial and movement fixing structure. 4,207,735, Cl. 368-300.000.

Ishigami, Noriakira, to Aisin Seiki Company, Limited. Hydraulic pressure control system. 4,208,074, Cl. 303-6.00C.

Ishii, Takatoshi: *See—*
Kumahara, Mitsuo; and Ishii, Takatoshi, 4,208,715, Cl. 364-200.000.

Ishikawa, Masakazu; Oka, Hiroyuki; Shibatani, Juichi; and Obu, Yuichiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Rust preventing device for a rotor of a disc brake. 4,207,971, Cl. 188-218.00A.

Ishizuka, Takashi; and Miwa, Naoki, to Nitto Electric Industrial Co., Ltd. Article coated with baked layer of water-soluble heat-resistant insulating varnish. 4,208,464, Cl. 428-377.000.

Iskendarian, Alex O. Stackable stool. 4,208,072, Cl. 297-440.000.

Isogai, Tokio: *See—*
Nate, Kazuo; Kotsuka, Kyoko; and Isogai, Tokio, 4,208,005, Cl. 228-175.000.

Isozaki, Kazuhisa: *See—*
Irie, Hiromitsu; Tajima, Fumio; Kuribayashi, Nobuhide; and Isozaki, Kazuhisa, 4,208,298, Cl. 252-301.10W.

Ito, Fumio; Sunouchi, Akio; Matsuda, Mutsuhide; Suzuki, Ryoichi; Uchiyama, Takashi; and Watanabe, Yoshiaki, to Canon Kabushiki Kaisha. Camera with selectable automatic and manual exposure control. 4,208,110, Cl. 354-31.000.

Ito, Fumio; and Yazaki, Mutsunobu, to Canon Kabushiki Kaisha. Photographic camera. 4,208,114, Cl. 354-86.000.

Ito, Kenji: *See—*
Hashino, Yasuo; Hayano, Fusakazu; and Ito, Kenji, 4,208,508, Cl. 528-175.000.

Iwamoto, Minoru; Okamoto, Toyoo; and Mita, Shigeru, to Ricoh Company, Ltd. Reproduction apparatus comprising sorting device. 4,208,122, Cl. 355-14.00R.

Iwanaga, Yoshiharu, to Ricoh Company, Ltd. Lithographic and etching apparatus. 4,208,233, Cl. 156-345.000.

Iwasa, Yoshio: *See—*
Ushijima, Takashi; Iwasa, Yoshio; and Horiuchi, Tomofusa, 4,208,361, Cl. 261-121.00B.

Izon Corporation: *See—*
Yevick, George J., 4,208,363, Cl. 264-1.000.

Izumi, Takashi: *See—*
Kinoshita, Tatsuo; and Izumi, Takashi, 4,208,311, Cl. 260-29.2TN.

J. C. Sales & Mfg. Co., Inc.: *See—*
Pesiri, James B., 4,208,071, Cl. 297-369.000.

Jablkiewicz, Jerzy: *See—*
Ostrowski, Jerzy; Sierputowski, Piotr; Turkowski, Lukasz; Jablkiewicz, Jerzy; Pachoiski, Jan; and Jedryka, Tadeusz, 4,207,728, Cl. 57-58.890.

Jabsen, Felix S., to Babcock & Wilcox Company, The. Fuel assembly with a removable end fitting. 4,208,248, Cl. 176-78.000.

Jabsen, Felix S., to Babcock & Wilcox Company, The. Hydraulic seismic support for nuclear fuel assembly. 4,208,249, Cl. 176-78.000.

Jacobs, Clyde L.: *See—*
Sullivan, Robert P.; and Jacobs, Clyde L., 4,207,648, Cl. 15-316.00R.

Jacobson, Allan J.; and Silbernagel, Bernard G., to Exxon Research & Engineering Co. Cell containing alkali metal anode, cathode and alkali metal-metal-chalcogenide compound solid electrolyte. 4,208,474, Cl. 429-191.000.

Jacques, Ferlampin: *See—*
Deleens, Gerard; Jacques, Ferlampin; and Poulain, Claude, 4,208,493, Cl. 525-420.000.

Jagger, Brian E., to Xerox Corporation. Serial printer with cable tensioning apparatus. 4,208,141, Cl. 400-335.000.

Jaimee, Angelo: *See—*
Rao, Vemulapalli D. N.; Jaimee, Angelo; and Howes, Benjamin T., 4,207,660, Cl. 29-156.4WL.

Jamiolkowski, Dennis D.: *See—*
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,208,511, Cl. 528-272.000.

Janev, Janco H.: *See—*
Jordanov, Jordan T.; Abrashev, Georgi I.; Jekov, Velyu D.; Georgiev, Georgi T.; Haralampiev, Georgi A.; Janev, Janco H.; and Prodanov, Velcho A., 4,208,041, Cl. 266-196.000.

Janssen, Donovan M.; Kellow, Raymond E., Sr.; Picker, William A.; and Radman, Anton J., Jr., to International Business Machines Corporation. Damper for constant load arm. 4,208,684, Cl. 360-104.000.

Janssen Pharmaceutica N.V.: *See—*
Sanczuk, Stefan; and Hermans, Hubert K. Fr., 4,208,418, Cl. 424-267.000.

Janu, George J.: *See—*
Holloway, Thomas M.; Janu, George J.; Laakaniemi, Richard N.; and Lederman, Warren A., 4,207,914, Cl. 137-85.000.

Jeannette, William W. Multiple dental shade guide system. 4,207,678, Cl. 433-203.000.

Jedryka, Tadeusz: *See—*
Ostrowski, Jerzy; Sierputowski, Piotr; Turkowski, Lukasz; Jablkiewicz, Jerzy; Pacholski, Jan; and Jedryka, Tadeusz, 4,207,728, Cl. 57-58.890.

Jefferson, Raymond. Rotary wing aircraft. 4,208,025, Cl. 244-12.200.

Jekov, Velyu D.: *See—*
Jordanov, Jordan T.; Abrashev, Georgi I.; Jekov, Velyu D.; Georgiev, Georgi T.; Haralampiev, Georgi A.; Janev, Janco H.; and Prodanov, Velcho A., 4,208,041, Cl. 266-196.000.

Jenkins, Jon A., to Imed Corporation. System for controlling the flow of intravenous fluids to a patient. 4,207,871, Cl. 128-214.00R.

Jerome, Robert, to Compagnie Francaise des Petroles. Core bit having axial conical core breaker. 4,207,954, Cl. 175-330.000.

Joh. Vaillant GmbH u. Co.: *See—*
Kampfenkel, Ottomar; and Gelesic, Antun, 4,207,751, Cl. 62-141.000.

Johansson, Lennart. Method of making building panel structure. 4,208,228, Cl. 156-84.000.

John Dusenbery Co., Inc.: *See—*
Dusenbery, John F., 4,208,019, Cl. 242-56.00A.

Johnson, Clifford E.: *See—*
Hyler, John H.; Lott, Walter E.; and Johnson, Clifford E., 4,207,691, Cl. 37-124.000.
Hyler, John H.; Lott, Walter E.; and Johnson, Clifford E., 4,207,692, Cl. 37-129.000.

Johnson Controls, Inc.: *See—*
Holloway, Thomas M.; Janu, George J.; Laakaniemi, Richard N.; and Lederman, Warren A., 4,207,914, Cl. 137-85.000.

Johnson, Frank. Odor dispensing system for hand-held stereoscopic viewer and replaceable container therefor. 4,208,098, Cl. 350-134.000.

Johnson, Matthey & Co., Limited: *See—*
Webster, Dennis E.; and Rouse, Ian M., 4,208,353, Cl. 568-472.000.

Jojan, Inc.: *See—*
Cope, Rick R.; and Rosengrants, Delbert L., 4,207,947, Cl. 168-29.000.

Jon, Min-Chung: *See—*
Carlos, Mark F.; Jon, Min-Chung; and Palazzo, Vito, 4,207,771, Cl. 73-587.000.

Jonak, Vladimir, to Alfa-Laval AB. Control valve. 4,208,031, Cl. 251-61.200.

Jones, Bernard H.; Cox, Daniel; and Gallagher, Don R., to Owens-Corning Fiberglas Corporation. Method and apparatus for collecting strand. 4,208,016, Cl. 242-18.00G.

Jones, Billy R.; and Sheridan, John J., to General Motors Corporation. Automatic headlamp control system. 4,208,615, Cl. 315-83.000.

Jones, Warren W.: *See—*
Mulach, Arthur; and Jones, Warren W., 4,208,597, Cl. 310-59.000.

Jonsson, Arne F., to Pumpex Production AB. Hydrodynamic pump units and regulators therefor. 4,208,171, Cl. 417-15.000.

Jonsson, Nils G., to Atlas Copco Aktiebolag. Feed beam. 4,207,805, Cl. 91-508.000.

Jordanov, Jordan T.; Abrashev, Georgi I.; Jekov, Velyu D.; Georgiev, Georgi T.; Haralampiev, Georgi A.; Janev, Janco H.; and Prodanov, Velcho A. Metallurgical apparatus. 4,208,041, Cl. 266-196.000.

Joseph Oat Corporation: *See—*
Holtz, Maurice; Singh, Krishna P.; and Soler, Alan I., 4,207,944, Cl. 165-82.000.

Jouffret, Michel: *See—*
Costantini, Michel; and Jouffret, Michel, 4,208,339, Cl. 260-396.00R.
Costantini, Michel; Dromard, Adrien; Jouffret, Michel; and Nantermet, Roland, 4,208,536, Cl. 568-771.000.

Junge, Steve A.: *See—*
Steilen, Ronald M.; and Junge, Steve A., 4,207,823, Cl. 111-85.000.

Justice, Douglas E.: *See—*
Holdiman, Joseph W.; and Justice, Douglas E., 4,207,707, Cl. 49-501.000.

Kabushiki Kaisha Daini Seikosha: *See—*
Kaneko, Masao, 4,208,581, Cl. 250-277.00R.

Kabushiki Kaisha Kawaguchiya Hayashi Juho Kayaku-Ten: *See—*
Hayashi, Hisao, 4,207,798, Cl. 89-191.00R.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See—*
Murakami, Keiji, 4,207,791, Cl. 84-1.010.

Kabushiki Kaisha Meiji Gomu Kasei: *See—*
Fujita, Masanao; Sugawara, Toshiaki; and Oosaki, Keizo, 4,208,015, Cl. 241-16.000.

Kabushiki Kaisha Sato Kenkyusho: *See—*
Sato, Yo, 4,207,816, Cl. 101-291.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Seki, Hidehiko, 4,207,731, Cl. 368-29.000.

Kabushiki Kaisha Tokyo Kikai Seisakusho: *See—*
Watanabe, Seiichi, 4,207,815, Cl. 101-248.000.

Kagami, Akiyasu: *See—*
Hase, Takashi; Kagami, Akiyasu; Mimura, Yoshiyuki; Narita, Kinichiro; and Hiraki, Minoru, 4,208,612, Cl. 313-495.000.
Hase, Takashi; Kagami, Akiyasu; Mimura, Yoshiyuki; Narita, Kinichiro; and Hiraki, Minoru, 4,208,613, Cl. 313-495.000.

Kagawa, Hideo. Tub-bathing equipment for bedridden old people and physically-handicapped people. 4,207,629, Cl. 4-540.000.

Kakar, Sarwan K.; and Cramer, John J., to BASF Wyandotte Corporation. Non-durable flame-repellent finish for synthetic fabrics and synthetic-cotton blends. 4,208,463, Cl. 428-276.000.

Kakei, Masanori: *See—*
Matsuo, Tadao; Mashimo, Satoshi; Takami, Eiichi; Mishima, Kyoichi; Namizashi, Hiroshi; Uenoyama, Etsuji; and Kakei, Masanori, 4,208,500, Cl. 526-217.000.

Kakuris, Paul A.: *See—*
Schaaf, Cecil; McIntosh, Russell J.; and Morton, David C., 4,207,718, Cl. 52-585.000.

Kali, David I. Connector for electrical strip cable. 4,208,084, Cl. 339-98.000.

Kalies, Helmut: *See—*
Seehofer, Friedlieb; and Kalies, Helmut, 4,207,906, Cl. 131-21.00D.

Kalker, Philip E.: *See—*
Ruben, Samuel; and Kalker, Philip E., 4,207,766, Cl. 73-301.000.

Kalsi, Manmohan S.: *See—*
Alvarez, Patricio D.; and Kalsi, Manmohan S., 4,208,035, Cl. 251-196.000.

Kalt, Charles G.; and Kalt, Thomas F., to Dielectric Systems International. Electrostatic display device. 4,208,103, Cl. 350-269.000.

Kalt, Thomas F.: *See—*
Kalt, Charles G.; and Kalt, Thomas F., 4,208,103, Cl. 350-269.000.

Kamath, Venkatesh: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,208,297, Cl. 252-174.110.
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,208,296, Cl. 252-174.110.

Kampfenkel, Ottomar; and Gelesic, Antun, to Joh. Vaillant GmbH u. Co. Sorption heat pump. 4,207,751, Cl. 62-141.000.

Kanebo Foods, Ltd.: *See*—
Noborio, Ken-Ichi; and Maeda, Masao, 4,208,432, Cl. 426-4.000.

Kaneko, Masao, to Kabushiki Kaisha Daini Seikosha. Radioactive ray gauge. 4,208,581, Cl. 250-277.00R.

Kanouse, Richard C.: *See*—
Leliaert, Raymond M.; Kanouse, Richard C.; Butler, Bill J.; and Linder, Robert N., 4,207,711, Cl. 51-432.000.

Kanuch, George M.; and Staff, Charles H., to Fairmont Foods Company. Process for retarding mold in grain. 4,208,443, Cl. 426-331.000.

Kao Soap Co., Ltd.: *See*—
Sai, Fumio; and Fujino, Takashi, 4,208,295, Cl. 252-94.000.

Kaplan, Alan E., to Bell Telephone Laboratories, Incorporated. Telephone office assignment verification. 4,208,553, Cl. 179-175.30A.

Karam, Johnson D. Container. 4,207,981, Cl. 206-457.000.

Karl Mengele & Sohne Maschinenfabrik & Eisengiesserei GmbH & Co: *See*—
Lippl, Wilhelm, 4,207,726, Cl. 56-13.900.

Karol, Meryl H.; and Alarie, Yves C., to University of Pittsburgh, The. Tolyl isocyanate test antigens, methods for their preparation and use in detecting diisocyanates and antibodies to diisocyanates. 4,208,399, Cl. 424-1.000.

Kasai, Akio: *See*—
Kubo, Akira; Todoroki, Nobuaki; Teshima, Yasuhiko; Kuranami, Nobuo; Tsutsui, Nobukazu; and Kasai, Akio, 4,208,262, Cl. 204-181.00T.

Kasubuchi, Takeshi: *See*—
Fujimoto, Isao; Kasubuchi, Takeshi; and Sumitomo, Yuji, 4,208,139, Cl. 400-126.000.

Katayama, Satoshi: *See*—
Minami, Norio; Kijima, Shizumasa; Katayama, Satoshi; and Shionoya, Hiroshi, 4,208,426, Cl. 424-283.000.

Kato, Shogo: *See*—
Kitai, Kiyoshi; Morino, Yukio; Kato, Shogo; and Watanabe, Masanori, 4,208,111, Cl. 354-33.000.

Katsuura, Kiyoshi: *See*—
Ikura, Katsuyata; Katsuura, Kiyoshi; Nakada, Akira; and Mizuno, Masami, 4,208,411, Cl. 424-245.000.

Kauppi, Pekka K. Sulphate soap skimming apparatus. 4,208,286, Cl. 210-187.000.

Kawai, Masayoshi: *See*—
Sakai, Tadao; and Kawai, Masayoshi, 4,208,210, Cl. 430-140.000.

Kawamata, Motoo; Ohshima, Kazushi; Kudoh, Akihide; and Kotani, Makoto, to Mitsui Toatsu Chemicals Incorporated. Process for the selective ortho-alkylation of phenolic compounds. 4,208,537, Cl. 568-804.000.

Kawase, Tooro: *See*—
Hattori, Tadashi; Kobashi, Mamoru; Kawase, Tooro; and Ueno, Yoshiki, 4,207,847, Cl. 123-117.00R.

Kawneer Company, Inc.: *See*—
Hubbard, S. Eugene, 4,207,717, Cl. 52-235.000.

Kearney & Trecker Corporation: *See*—
Chung, Han-Chang, 4,208,718, Cl. 364-474.000.

Kehlhofer, Rolf, to BBC Brown, Boveri & Co. Mixed-flow feedwater heater having a regulating device. 4,207,842, Cl. 122-406.00S.

Keithler, William R., to Grow Group, Inc. Method for protecting metallic substrates. 4,208,452, Cl. 427-204.000.

Kekas, Dennis H.; Lynch, Robert C.; Mathewson, James A.; McAdams, Ronald P.; and Pasterchick, Harry, Jr., to International Business Machines Corporation. Easily reconfigurable data entry terminal. 4,208,081, Cl. 339-31.00R.

Kelatron Pharmaceutical Division of Intermountain Laboratories Inc.: *See*—
Fouad, M. Taher A., 4,208,405, Cl. 424-177.000.

Kellow, Raymond E., Sr.: *See*—
Janssen, Donovan M.; Kellow, Raymond E., Sr.; Picker, William A.; and Radman, Anton J., Jr., 4,208,684, Cl. 360-104.000.

Kelly, Michael G.; and Pastien, Eugene R., to Conwed Corporation. Plastic netting for load unitization. 4,208,457, Cl. 428-107.000.

Kelly, Robert C., to Upjohn Company, The. 9-Deoxy-6,9α-epoxymethano-pg C-1 amides. 4,208,512, Cl. 542-426.000.

Kelly, Robert E.; and Friedman, Nathan, to Mill Printing and Lithographing Corporation. Decorative envelope packet. 4,207,984, Cl. 206-554.000.

Kelly, Vernon A., Jr. Method of forming high quality forgings. 4,207,762, Cl. 72-360.000.

Kemmerer Coal Company, The: *See*—
Yorgensen, Phillip, 4,208,097, Cl. 350-97.000.

Kendall Company, The: *See*—
Annis, Larry D., 4,207,876, Cl. 128-24.00R.
Arkans, Edward J., 4,207,875, Cl. 128-24.00R.
Patel, Bhupendra C., 4,207,899, Cl. 128-349.00B.
Patel, Bhupendra C.; Schweizer, Russell J.; and Smith, Jesse C., 4,207,900, Cl. 128-349.00B.

Kesterman, James E., to Dover Corporation. Locking device for a ball valve. 4,208,033, Cl. 251-90.000.

KFC San Juan, Inc.: *See*—
Ochoa, Dominique, 4,208,291, Cl. 210-522.000.

Khalafalla, Sanaa E.; Reimers, George W.; and Rholl, Stephen A., to United States of America, Interior. Dilution stable water based magnetic fluids. 4,208,294, Cl. 252-62.520.

Khalafalla, Sanaa E.: *See*—
Pahlman, John E.; and Khalafalla, Sanaa E., 4,208,379, Cl. 423-49.000.

Kienzle, Frank; and Rosen, Perry, to Hoffmann-La Roche Inc. Synthesis of cyclopentanol. 4,208,533, Cl. 560-122.000.

Kiff, Edville A. Method and apparatus for determining the point at which pipe is stuck in a well. 4,207,765, Cl. 73-151.000.

Kiga, Shotaro; Yoshida, Naoshi; Edahiro, Kenichi; and Sakata, Tadashi, to Nippon Soda Company Limited. Method of preparing asbestos diaphragms for electrolysis cell. 4,208,246, Cl. 162-106.000.

Kijima, Shizumasa: *See*—
Minami, Norio; Kijima, Shizumasa; Katayama, Satoshi; and Shionoya, Hiroshi, 4,208,426, Cl. 424-283.000.

Kikuchi, Mitsuo: *See*—
Hiraga, Yoichi; and Kikuchi, Mitsuo, 4,208,389, Cl. 423-321.00S.

Killpatrick, Joseph E.; and Ormsby, Ralph D., to Honeywell Inc. Control apparatus. 4,208,024, Cl. 244-3.130.

Kimura, Takeo: *See*—
Ohmura, Kaoru; Shibasaki, Ichiro; and Kimura, Takeo, 4,208,477, Cl. 430-281.000.

Kinefac Corp.: *See*—
Greis, Howard A.; and Bruinsma, Robert F., 4,207,785, Cl. 82-2.00R.

King, Leonard T., to Komax Systems, Inc. Static mixing apparatus. 4,208,136, Cl. 366-338.000.

Kinjo, Hisao: *See*—
Ozawa, Keiji; and Kinjo, Hisao, 4,208,671, Cl. 358-4.000.

Kinney, George A., to Du Pont de Nemours, E. I., and Company. Process for preparing a nonwoven web. 4,208,366, Cl. 264-24.000.

Kinoshita, Tatsuo; and Izumi, Takashi, to Mitsui Petrochemical Industries Ltd. Aqueous dispersion of urethane diamine having storage stability and coating composition containing it. 4,208,311, Cl. 260-29.2TN.

Kinzenbaw, Jon E. Agricultural row marker. 4,207,950, Cl. 172-126.000.

Kirby, Edward, to TRW Inc. Solderless electrical connector. 4,208,083, Cl. 339-97.00P.

Kishita, Hirofumi: *See*—
Okada, Fumio; Kishita, Hirofumi; and Sato, Naomi, 4,208,312, Cl. 260-29.20M.

Kissick, Thomas P.: *See*—
Wade, Peter C.; and Kissick, Thomas P., 4,208,518, Cl. 544-62.000.

Kisters, Theodor; and Vogler, Alfred, to Babcock-Bsh Aktiengesellschaft Vormals Butner-Schilde-Haas AG. Process and apparatus for the absorptive removal of pollutants from waste gases. 4,208,383, Cl. 423-215.500.

Kiszelly, Eniko: *See*—
Rozsa, Laszlo; Petocz, Lujza; Grasser, Katalin; Kosoczky, Ibolya; Kiszelly, Eniko; and Nagy, Jozsef, 4,208,410, Cl. 424-244.000.

Kita, Hisanao: *See*—
Wada, Takeshi; Kita, Hisanao; Okuni, Tetsuo; and Namatame, Yoshio, deceased, 4,208,564, Cl. 219-73.100.

Kitagawa, Ikuo: *See*—
Ikeda, Katsuzo; and Kitagawa, Ikuo, 4,208,555, Cl. 200-52.00R.

Kitagawa, Katsushi: *See*—
Nakayasu, Michiharu; Kumamoto, Kenzo; Suzuki, Kenji; Kuba, Arata; and Kitagawa, Katsushi, 4,208,180, Cl. 431-284.000.

Kitai, Kiyoshi; Morino, Yukio; Kato, Shogo; and Watanabe, Masanori, to Seiko Koki Kabushiki Kaisha. Synchronizing device for electronic program shutter. 4,208,111, Cl. 354-33.000.

Kitchen, John P.; and Gabhart, Terry L., to Hoover Universal, Inc. Box spring assembly with end rail spring mounting units. 4,207,634, Cl. 5-255.000.

Kitrick, Christopher J. Tensegrity module structure and method of interconnecting the modules. 4,207,715, Cl. 52-81.000.

Kitsunezaki, Choro, to Oyo Corporation. Exciting method for logging by S wave. 4,207,961, Cl. 181-106.000.

Kiwala, Jacob: *See*—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,208,308, Cl. 252-522.00R.

Kiwi Coders Corporation: *See*—
Siegal, Burton L., 4,207,817, Cl. 101-348.000.

Kjoller, Hans O. S.: *See*—
Eklund, Mats F.; Kjoller, Hans O. S.; and Nyman, Anders B. J., 4,208,714, Cl. 364-200.000.

Klaerner, Peter: *See*—
Bronstert, Klaus; Klaerner, Peter; and Staiger, Gerhard, 4,208,497, Cl. 526-138.000.

Klasco, Michael, to Integrated Sound Systems Inc. Loudspeaker system. 4,207,963, Cl. 181-147.000.

Klass, Donald L.; and Conrad, John R., to Institute of Gas Technology. Removal of sulfur dioxide from waste gases. 4,208,387, Cl. 423-243.000.

Kleczkowski, Stawomir P., to International Business Machines Corporation. Frusto-conical magnetic recording disc. 4,208,683, Cl. 360-99.000.

Klein, Schanzlin & Becker Aktiengesellschaft: *See*—
Becker, Karl-Heinz; Knopfel, Hans-Dieter; Nicklas, Alexander; Hergt, Peter; and Diler, Engin, 4,208,169, Cl. 416-185.000.

Kleine-Kleffmann, Werner: *See*—
Hoffken, Erich; Kleine-Kleffmann, Werner; Bertram, Rolf; Abele, Karl-Heinz; and Michalski, Gunter, 4,208,039, Cl. 266-50.000.
Kleiner, Frank: *See*—
Schmidt, Manfred; Cohnen, Wolfgang; Kleiner, Frank; Freitag, Dieter; and Idel, Karsten, 4,208,489, Cl. 525-146.000.
Kleiner, Richard N.; and Mehalchick, Emil J., to GTE Service Corporation. Method for enhancing the crystallization rate of high purity amorphous Si_3N_2 powder by intimate contact with a titanium containing material. 4,208,215, Cl. 106-73.300.
Klen, Han-Ulrich: *See*—
Haberer, Klaus; Klen, Han-Ulrich; and Normann, Sabine, 4,208,281, Cl. 210-36.000.
Klibansky, Victoria A. S. Pediatric suction receptacle. 4,207,894, Cl. 128-276.000.
Klie, Wolfgang: *See*—
Huber, Guntram; Hutai, Hubert; Klie, Wolfgang; and Fischer, Wolfgang, 4,208,069, Cl. 293-102.000.
Klimeck, Edward F.: *See*—
Idec, Eric J.; Klimeck, Edward F.; and Hultgren, Eric A., 4,208,144, Cl. 401-192.000.
Kline, Donald C., to Lehampton Farms, Inc. Dewatering press. 4,207,811, Cl. 100-121.000.
Kline, Kenneth H.; and Kramer, Walter W., to Fuller Company. Fluid bed nozzle retainer. 4,207,682, Cl. 34-57.00A.
Klotzner, Winfried: *See*—
Borst, Wolfgang; Klotzner, Winfried; Pagel, Ernst-Olav; and Vetter, Hermann, 4,207,846, Cl. 123-117.00D.
Knechtle, Bruno; and Dahler, Paul, to Blockfabrik Lichtensteig, AG. Process for producing paper having a coating of pressure-sensitive transfer copying material. 4,208,460, Cl. 428-195.000.
Knippenberg, Wilhelmus F.; Verspui, Gerrit; and Hagen, Siegfried H., to U.S. Philips Corporation. Method of making an electric resistor having a resistance body consisting of silicon carbide having a negative temperature coefficient. 4,208,449, Cl. 427-101.000.
Knopfel, Hans-Dieter: *See*—
Becker, Karl-Heinz; Knopfel, Hans-Dieter; Nicklas, Alexander; Hergt, Peter; and Diler, Engin, 4,208,169, Cl. 416-185.000.
Knotik, Karl; and Leichter, Peter, to Oesterreichische Studiengesellschaft fur Atomenergie G.m.b.H. Thin film treatment apparatus. 4,208,243, Cl. 159-6.00W.
Knowles, James. Composite construction beam. 4,207,719, Cl. 52-693.000.
Knox Manufacturing Co.: *See*—
Brown, Donald J., 4,207,979, Cl. 206-456.000.
Kobashi, Mamoru: *See*—
Hattori, Tadashi; Kobashi, Mamoru; Kawase, Tooro; and Ueno, Yoshiki, 4,207,847, Cl. 123-117.00R.
Kobayashi, Yasuhisa: *See*—
Mase, Yoshio; Hayashi, Tadayoshi; Natsuume, Shinichi; Kobayashi, Yasuhisa; and Moriya, Yoshiyuki, 4,207,661, Cl. 29-157.00R.
Kobuya, Tomohiko: *See*—
Watanabe, Minoru; Nishimura, Toshio; Omi, Tadao; Koomoto, Kotaro; Kobuya, Tomohiko; and Shimizu, Kenichi, 4,208,611, Cl. 313-487.000.
Kohn, Jean, to Baltek Corporation. Technique for converting balsa logs into panels. 4,208,369, Cl. 264-46.500.
Kohtani, Yutaka: *See*—
Amikura, Takashi; Kohtani, Yutaka; and Takahashi, Kiyoshi, 4,208,108, Cl. 352-27.000.
Kolbl, Heinz: *See*—
Zachmeier, Alois; Wildner, Horst; and Kolbl, Heinz, 4,208,120, Cl. 354-354.000.
Kollmorgen Technologies Corporation: *See*—
Stahl, Fritz; and Steffen, Horst, 4,208,255, Cl. 204-72.000.
Komax Systems, Inc.: *See*—
King, Leonard T., 4,208,136, Cl. 366-338.000.
Komiya, Hirokichi: *See*—
Ohki, Yoshinori; and Komiya, Hirokichi, 4,207,852, Cl. 123-148.00E.
Kondo, Masatsune; and Tanoue, Akira, to Sumitomo Chemical Company, Limited. Process for preparing polymer resins. 4,208,490, Cl. 525-243.000.
Koomoto, Kotaro: *See*—
Watanabe, Minoru; Nishimura, Toshio; Omi, Tadao; Koomoto, Kotaro; Kobuya, Tomohiko; and Shimizu, Kenichi, 4,208,611, Cl. 313-487.000.
Kopecki, Ronald J.: *See*—
Beseke, Kermit M.; Hoffmann, James E.; and Kopecki, Ronald J., 4,208,631, Cl. 455-92.000.
Koppens Machinefabriek B.V.: *See*—
Koppens, Wilhelmus F. A., 4,207,654, Cl. 17-32.000.
Koppens, Wilhelmus F. A., to Koppens Machinefabriek B.V. Device for preparing coherent products from deformable foodstuffs. 4,207,654, Cl. 17-32.000.
Korte-Jungermann Gesellschaft fur Fassadenbau und Befesstigungstechnik mit beschrankter Haftung: *See*—
Korte-Jungermann, Hans W., 4,208,133, Cl. 366-130.000.
Korte-Jungermann, Hans W., to Korte-Jungermann Gesellschaft fur Fassadenbau und Befesstigungstechnik mit beschrankter Haftung. Injection cartridge. 4,208,133, Cl. 366-130.000.
Kortikov, Viktor S.: *See*—
Belyakov, Viktor P.; Gustov, Vilgelm F.; Step, Khaim Y.; Garin, Vadim A.; Orlov, Valentin K.; Kortikov, Viktor S.; Prokofieva, Nina A.; Terushkina, Anna E.; and Vinogradova, Ljudmila B., 4,208,360, Cl. 261-114.00R.
Kosoczky, Ibolya: *See*—
Rozsa, Laszlo; Petocz, Lujza; Grasser, Katalin; Kosoczky, Ibolya; Kiszelly, Eniko; and Nagy, Jozsef, 4,208,410, Cl. 424-244.000.
Kot, Casey: *See*—
Meiri, Samuel; Kot, Casey; Rogers, B. H. Gerald; and Epstein, Max, 4,207,872, Cl. 128-4.000.
Kotani, Makoto: *See*—
Kawamata, Motoo; Ohshima, Kazushi; Kudoh, Akihide; and Kotani, Makoto, 4,208,537, Cl. 568-804.000.
Kotsuka, Kyoko: *See*—
Nate, Kazuo; Kotsuka, Kyoko; and Isogai, Tokio, 4,208,005, Cl. 228-175.000.
Kouwenhoven, Herman W.; and Stork, Willem H. J., to Shell Oil Company. Crystalline silicates and process of preparation. 4,208,305, Cl. 252-431.00N.
Kovacic, Thomas: *See*—
Hansen, Robert N., 4,208,065, Cl. 280-507.000.
Koyo Seiko Company Limited: *See*—
Miki, Toshio, 4,208,078, Cl. 308-217.000.
Kraemer, Dieter; Plainer, Hermann; and Schleier, Waldemar, to Rohm GmbH. Pearl polymer containing hollow pearls. 4,208,309, Cl. 260-8.000.
Kraft, Kurt; Walz, Gerd; and Wirth, Thaddaus, to Hoechst Aktiengesellschaft. Thermosetting compositions. 4,208,488, Cl. 525-107.000.
Kraftwerk Union Aktiengesellschaft: *See*—
Exner, Gerhard; and Festinori, Volfango, 4,207,784, Cl. 81-54.000.
Kralowetz, Bruno; and Blaimschein, Gottfried, to GFM Gesellschaft fu Fertigungstechnik und Maschinenbau Aktiengesellschaft. Machine for machining crankpins of a multiple-throw crankshaft. 4,208,156, Cl. 409-165.000.
Kramer, Walter W.: *See*—
Kline, Kenneth H.; and Kramer, Walter W., 4,207,682, Cl. 34-57.00A.
Krause, Heinz, to Siemens Aktiengesellschaft. Current supply branching arrangement for separation of signal and supply currents. 4,208,633, Cl. 330-56.000.
Krebs Engineers: *See*—
Grieve, Donald F.; and Hochscheid, Robert E., 4,208,270, Cl. 209-211.000.
Krementsov, Yury. Instrument and method of measuring dilatation of cervix uteri. 4,207,902, Cl. 128-778.000.
Krimmel, Eberhard, to Siemens Aktiengesellschaft. Charge coupled device with buried zones in a semiconductor substrate for use especially as a light sensor. 4,208,668, Cl. 357-24.000.
Kring, Elbert V., to Du Pont de Nemours, E. I., and Company. Gaseous contaminant dosimeter with diffusion device therefor and method. 4,208,371, Cl. 422-61.000.
Krivenko, Valery G.: *See*—
Kuchuk-Yatsenko, Sergei I.; Krivenko, Valery G.; Podola, Nikolai V.; Krivonos, Vadim P.; and Chev, Boris L. G., 4,208,569, Cl. 219-97.000.
Krivonos, Vadim P.: *See*—
Kuchuk-Yatsenko, Sergei I.; Krivenko, Valery G.; Podola, Nikolai V.; Krivonos, Vadim P.; and Chev, Boris L. G., 4,208,569, Cl. 219-97.000.
Kronfeld, Jerome; and Furst, Garry, to American Brush Company, Inc. Applicator brush package. 4,207,977, Cl. 206-361.000.
Kronsberg, Herbert E.: *See*—
Lawrence, George J.; and Kronsberg, Herbert E., 4,208,085, Cl. 339-103.00C.
Kruy, Theodore A., to American Cystoscope Makers, Inc. Endoscope deflection control. 4,207,873, Cl. 128-6.000.
Kuba, Arata: *See*—
Nakayasu, Michiharu; Kumamoto, Kenzo; Suzuki, Kenji; Kuba, Arata; and Kitagawa, Katsushi, 4,208,180, Cl. 431-284.000.
Kubiatowicz, David O.; and Bolles, Theodore F., to Hoffman-La Roche Inc. Technetium-labeled complexes, production and use thereof. 4,208,398, Cl. 424-1.000.
Kubo, Akira; Todoroki, Nobuaki; Teshima, Yasuhiko; Kuranami, Nobuo; Tsutsui, Nobukazu; and Kasai, Akio, to Shinto Paint Co., Ltd.; and Honda Motor Co. Ltd. Electrodeposition coating. 4,208,262, Cl. 204-181.00T.
Kuchuk-Yatsenko, Sergei I.; Krivenko, Valery G.; Podola, Nikolai V.; Krivonos, Vadim P.; and Chev, Boris L. G. Device for controlling the process of flash-butt welding. 4,208,569, Cl. 219-97.000.
Kudoh, Akihide: *See*—
Kawamata, Motoo; Ohshima, Kazushi; Kudoh, Akihide; and Kotani, Makoto, 4,208,537, Cl. 568-804.000.
Kuhlmann, Robert: *See*—
Nauroth, Peter; Esch, Heinz; Kuhlmann, Robert; Bode, Rudolf; Reisert, Arthur; Buhler, Harald; and Turk, Gunter, 4,208,316, Cl. 260-37.0SB.
Kuhn, Thomas R. Dismantlable tethered top with reversible halves. 4,207,701, Cl. 46-61.000.
Kumada, Masaharu: *See*—
Misumi, Akira; and Kumada, Masaharu, 4,208,208, Cl. 75-170.000.
Kumahara, Mitsuo; and Ishii, Takatoshi, to Tokyo Shibaura Electric Co., Ltd. Dual data processing system. 4,208,715, Cl. 364-200.000.
Kumamoto, Kenzo: *See*—
Nakayasu, Michiharu; Kumamoto, Kenzo; Suzuki, Kenji; Kuba, Arata; and Kitagawa, Katsushi, 4,208,180, Cl. 431-284.000.
Kuniyoshi, Yasunobu; Okada, Takashi; and Sumi, Takao, to Sony Corporation. Time base error correcting apparatus. 4,208,674, Cl. 358-8.000.
Kunzig, Adalbert: *See*—
Betzler, Otto; and Kunzig, Adalbert, 4,207,709, Cl. 51-100.00R.

Kuranami, Nobuo: *See*—
Kubo, Akira; Todoroki, Nobuaki; Teshima, Yasuhiko; Kuranami, Nobuo; Tsutsui, Nobukazu; and Kasai, Akio, 4,208,262, Cl. 204-181.00T.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Yamaguchi, Hachiro; Noguchi, Tatsuhiko; and Endo, Kiichi, 4,208,216, Cl. 106-74.000.
Kurek, Harry F. Pin extractor for integrated circuit tube. 4,207,665, Cl. 29-270.000.
Kuribayashi, Nobuhide: *See*—
Irie, Hiromitsu; Tajima, Fumio; Kuribayashi, Nobuhide; and Isozaki, Kazuhisa, 4,208,298, Cl. 252-301.10W.
Kurono, Masayasu; Hamanaka, Nobuyuki; Sakuyama, Shigeru; Chiba, Takeshi; and Nakai, Hisao, to Ono Pharmaceutical Co. Ltd. Prostaglandin analogues. 4,208,428, Cl. 424-305.000.
Kurz, Wilfried; and Glardon, Remi, to Les Fabriques d'Assortiments Reunies. Directionally solidified ductile magnetic alloys magnetically hardened by precipitation hardening. 4,208,225, Cl. 148-101.000.
Kusahara, Kohji: *See*—
Endo, Makoto; and Kusahara, Kohji, 4,208,391, Cl. 423-385.000.
Kuzuwata, Masayuki; Machida, Hazime; Tamura, Hiroshi; and Saito, Tadashi, to Ricoh Company, Ltd. Aqueous treating liquid for use in offset printing. 4,208,212, Cl. 106-2.000.
Kwiatkowski, George T.: *See*—
Hedaya, Eddie; Kwiatkowski, George T.; Peters, Edward N.; and Stewart, Donald D., 4,208,492, Cl. 525-389.000.
Laakaniemi, Richard N.: *See*—
Holloway, Thomas M.; Janu, George J.; Laakaniemi, Richard N.; and Lederman, Warren A., 4,207,914, Cl. 137-85.000.
Laboratoires Jacques Logeais: *See*—
Maillard, Jacques; Delaunay, Pierre; and Legeai, Jacky, 4,208,420, Cl. 424-270.000.
Lacey, Elsa S.: *See*—
Haltmar, Warren C.; and Lacey, Elsa S., 4,207,946, Cl. 166-274.000.
Lagerqvist, Torgny C. B.: *See*—
Giege, Sture; and Lagerqvist, Torgny C. B., 4,208,147, Cl. 29-117.000.
Laman, William H., to International Business Machines Corporation. Stabilized rotation of flexible disk files. 4,208,678, Cl. 360-71.000.
Lambert, Gerard L.; and Cook, John S., to Mattel, Inc. Flywheel-operated toy woodworking apparatus. 4,207,935, Cl. 144-1.00R.
Lambert Howarth & Sons Limited: *See*—
Swift, John, 4,207,824, Cl. 112-49.000.
Lamborn, Omer E., to Bendix Corporation, The. Deployable sonar array with interconnected transducers operated in the bending mode. 4,208,738, Cl. 367-173.000.
La Mere, Albert J.: *See*—
Polillo, William M.; Bray, Martin L.; Reno, Richard W.; and La Mere, Albert J., 4,208,549, Cl. 179-6.30R.
Lampert, Barry, to Rab Tec Products Corporation. Dental model articulator. 4,207,677, Cl. 433-60.000.
Lamson & Sessions Co., The: *See*—
Mortus, Harold J., 4,207,938, Cl. 151-21.00B.
Lancer Corporation: *See*—
Holdiman, Joseph W.; and Justice, Douglas E., 4,207,707, Cl. 49-501.000.
Landrio, Frank R.: *See*—
Armor, Anthony F.; Darby, William L.; Archibald, James B.; and Landrio, Frank R., 4,208,599, Cl. 310-64.000.
Langdale-Smith, Richard A.: *See*—
Priest, David C.; and Langdale-Smith, Richard A., 4,208,314, Cl. 260-33.20R.
Lapinet, Eugene; Cehovic, Georges; and Posternak, Theodore. Composition for the treatment and prevention of skin, eye and mucosal inflammation. 4,208,406, Cl. 424-180.000.
Larsen, Ole J.: *See*—
Bryden, Joseph E.; Larsen, Ole J.; and O'Callaghan, Desmond, 4,208,657, Cl. 343-5.0DP.
Lass, Harold M., to Corban Industries, Inc. Dry wall taping machine having an improved applicator head. 4,208,239, Cl. 156-575.000.
Latos, Thomas S., to Gould Inc. Method and apparatus for controlling plasma etching. 4,208,240, Cl. 156-627.000.
Laupman, Robert R., to Novanex Automation N.V. Phase stereophonic system. 4,208,546, Cl. 179-1.0GP.
Lautenschlager, Horst, to Mepla Inc. Mounting element for furniture hinges. 4,207,652, Cl. 16-130.000.
Lauzanne-Morelle, Eliane: *See*—
Morelle, Jean; and Lauzanne-Morelle, Eliane, 4,208,421, Cl. 424-274.000.
Lavallee, Francois A.; and Pritschau, Raymond H., to General Electric Company. Alkyl 3,5-dihydroxy-4-(2-benzothiazolyl)benzoates. 4,208,328, Cl. 548-180.000.
Lavigne, William J., Jr., to Carrier Corporation. Thermal economized refrigeration system. 4,207,749, Cl. 62-115.000.
Lawrence, George J.; and Kronsberg, Herbert E., to General Electric Company. Assembled wedge ring for electrical connectors. 4,208,085, Cl. 339-103.00C.
Layher, Ulrich: *See*—
Sivers, Rolf V.; and Layher, Ulrich, 4,207,957, Cl. 180-70.00P.
Lazarre, Flavien: *See*—
Bimond, Jean-Pierre; Etcheverria, Jean-Michel; Lazarre, Flavien; and Veron, Andre, 4,207,806, Cl. 92-31.000.
Etcheverria, Jean-Michel; Lazarre, Flavien; and Poujol, Pierre, 4,208,195, Cl. 55-159.000.
Leal, Richard A.: *See*—
Reed, James R.; Way, Terrance; and Leal, Richard A., 4,208,454, Cl. 427-238.000.
Leanza, William J.: *See*—
Christensen, Burton G.; and Leanza, William J., 4,208,330, Cl. 260-326.310.
LeBel, Gratian, to Tioxide Group Limited. Purification process. 4,208,393, Cl. 423-555.000.
Lecklider, Thomas H., to Gould Inc. Data point connection circuitry for use in display devices. 4,208,723, Cl. 364-900.000.
Lederman, Warren A.: *See*—
Holloway, Thomas M.; Janu, George J.; Laakaniemi, Richard N.; and Lederman, Warren A., 4,207,914, Cl. 137-85.000.
Ledig, Kurt W., deceased; and by Howes, David R., executor, to American Home Products Corporation. 7-(Substituted)-7H-pyrrolo[3,2-f]quinazoline-1,3-diamines. 4,208,520, Cl. 544-250.000.
Lee, Harold H., to University of Toledo, The. Tissue culture system. 4,208,483, Cl. 435-284.000.
Lee, Lin-nan: *See*—
Lu, Shyue-Ching; Lee, Lin-nan; and Fang, Russell J. F., 4,208,739, Cl. 375-2.000.
Lee, Richard J., to Standard Oil Company (Indiana). Substituted orthoquinones and derivatives. 4,208,340, Cl. 260-396.00R.
Leenhouts, Albert C., to Superior Electric Company, The. Chopping power supply for a bifilar stepping motor. 4,208,623, Cl. 318-696.000.
LeFevre, Robert J., to National Patent Development Corporation. Method and apparatus for molding toric contact lenses. 4,208,365, Cl. 264-1.000.
Lefort, Marcel: *See*—
Bargain, Michel; and Lefort, Marcel, 4,208,342, Cl. 556-436.000.
Le Gal, Andre A. Playpen. 4,208,037, Cl. 256-25.000.
Legeai, Jacky: *See*—
Maillard, Jacques; Delaunay, Pierre; and Legeai, Jacky, 4,208,420, Cl. 424-270.000.
Legrand, Pierre N.: *See*—
Bayorgeon, Jeffrey T.; van Dalen, Dirk J.; and Legrand, Pierre N., 4,207,681, Cl. 33-180.0AT.
Lehampton Farms, Inc.: *See*—
Kline, Donald C., 4,207,811, Cl. 100-121.000.
Leibow, Baruch; and Leibow, Isaac. Compressed air power generating system. 4,208,592, Cl. 290-52.000.
Leibow, Isaac: *See*—
Leibow, Baruch; and Leibow, Isaac, 4,208,592, Cl. 290-52.000.
Leichter, Peter: *See*—
Knotik, Karl; and Leichter, Peter, 4,208,243, Cl. 159-6.00W.
Leifheit International Gunter Leifheit: *See*—
Liebscher, Johannes; and Schulein, Rolf G., 4,207,641, Cl. 15-41.00R.
Leighton, Milton D.: *See*—
Blume, John H.; Bushnell, James D.; and Leighton, Milton D., 4,208,382, Cl. 423-210.000.
Leliaert, Raymond M.; Kanouse, Richard C.; Butler, Bill J.; and Linder, Robert N., to Wheelabrator-Frye Inc. Airless centrifugal blast device. 4,207,711, Cl. 51-432.000.
Lemere, Cordell T. Filter apparatus for welding mask. 4,207,882, Cl. 128-206.150.
Leroy, Michel. Relaxing furniture especially designed for the ventral and/or dorsal decubitus. 4,207,635, Cl. 5-437.000.
Les Fabriques d'Assortiments Reunies: *See*—
Kurz, Wilfried; and Glardon, Remi, 4,208,225, Cl. 148-101.000.
Les Industries BFG Limitee: *See*—
Drouin, Claude, 4,207,863, Cl. 126-198.000.
Lever Brothers Company: *See*—
Cottier, Derek; and Rossell, John B., 4,208,445, Cl. 426-607.000.
Leverentz, Gunter: *See*—
Fischer, Henning; and Leverentz, Gunter, 4,208,697, Cl. 361-229.000.
Levinstein, Hyman J.: *See*—
Harshbarger, William R.; Levinstein, Hyman J.; Mogab, Cyril J.; and Porter, Roy A., 4,208,241, Cl. 156-643.000.
Lewallyn, Michael. Swatch cutting system. 4,207,787, Cl. 83-23.000.
Lewis, David L.; Schenker, Barry A.; Suchanski, Mary R.; and Franks, C. Richard, deceased (by Yarcusko, Margaret S.), to Diamond Shamrock Corporation. Transition metal oxide electrodes. 4,208,450, Cl. 427-126.300.
Lewis, Sheldon N.; and Haggard, Richard A., to Rohm and Haas Company. Novel methacrylic polymers having pendant acrylate and methacrylate functionality. 4,208,313, Cl. 260-29.60R.
Lewis, Thomas R.: *See*—
Michne, William F.; and Lewis, Thomas R., 4,208,523, Cl. 546-97.000.
Lewmar Marine Limited: *See*—
Huggett, Richard D. J.; and Cook, William, 4,208,036, Cl. 254-150.00R.
Leybold-Heraeus GmbH: *See*—
Aichert, Hans; Dietrich, Walter; Hauff, Alfred; Hoffmann, Otto-Horst; and Stephan, Herbert, 4,208,042, Cl. 266-242.000.
Vogt, Henning, 4,208,585, Cl. 250-423.00P.
Leybold-Heraeus GmbH & Co. KG: *See*—
Schwiecker, Horst; Thorn, Gernot; and Ehrl, Hans-Peter, 4,207,835, Cl. 118-664.000.
Licentia Patent-Verwaltung-G.m.b.H.: *See*—
Rogowsky, York, 4,208,691, Cl. 361-79.000.
Licentia Patent-Verwaltunga G.m.b.H.: *See*—
Silber, Dieter; Fullman, Marius; Finck, Karl-Julius; and Winter, Wolfgang, 4,208,669, Cl. 357-38.000.

Liebscher, Johannes; and Schulein, Rolf G., to Leifheit International Gunter Leifheit. Carpet sweeping device. 4,207,641, Cl. 15-41.00R.
Life Savers, Inc.: *See—*
Friello, Dominick R.; Witzel, Frank; Clark, K. Warren; and Mackay, Donald A. M., 4,208,431, Cl. 426-3.000.
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Taeng, Ching Y.; and Sprecker, Mark A., to International Flavors & Fragrances Inc. Use of novel oxyhydrocarbylnorbornane derivatives for augmenting or enhancing the aroma of detergents. 4,208,297, Cl. 252-174.110.
Linder, Robert N.: *See—*
Leliaert, Raymond M.; Kanouse, Richard C.; Butler, Bill J.; and Linder, Robert N., 4,207,711, Cl. 51-432.000.
Lindsay, Thomas W.; and Westberg, Walter M., to Minnesota Mining and Manufacturing Company. Electrically conductive web. 4,208,696, Cl. 361-212.000.
Lindstrom, Roald E.: *See—*
Heinen, Harold J.; Peterson, David G.; and Lindstrom, Roald E., 4,208,378, Cl. 423-27.000.
Ling, Bernt, to ASEA Aktiebolag. Cloud altitude measuring apparatus. 4,208,125, Cl. 356-5.000.
Lintott, Edward R., to Lucas Industries Limited. Fuel pumping apparatus. 4,207,775, Cl. 74-55.000.
Lippl, Wilhelm, to Karl Mengele & Sohne Maschinenfabrik & Eisengiesserei GmbH & Co. Harvesting implement. 4,207,726, Cl. 56-13.900.
List, Hans; Pachernegg, Siegfried; and Schukoff, Bruno, to List, Hans. Compression ignition direct injection internal combustion engine. 4,207,843, Cl. 123-30.00D.
Litton Industrial Products, Inc.: *See—*
Salerno, Joseph F., 4,208,176, Cl. 425-139.000.
Littwin, Arthur K. Battery lift magnet control. 4,208,656, Cl. 340-635.000.
Litvin, Evgeny M.: *See—*
Babanin, Boris I.; Glyanchenko, Vladimir D.; Grechanichenko, Grigory M.; Erkin, Leonid I.; Litvin, Evgeny M.; Matskevich, Daniil D.; Nefedov, Petr Y.; Pankratiev, Oleg N.; Dobrovolsky, Evgeny V.; Petrukhno, Anatoly S.; and Frumkin, Vladlen M., 4,208,250, Cl. 201-10.000.
Liu, Chih H., to NCR Corporation. Position sensing for matrix printer. 4,208,137, Cl. 400-124.000.
Liu, Kou-Chang: *See—*
Howe, Robert K.; and Liu, Kou-Chang, 4,208,510, Cl. 548-247.000.
Lloyd, John W.; Wild, David E.; and Evatt, Humphry R., to Spembly Limited; and Lloyd, John W., part interest to each. Cryosurgical probe. 4,207,897, Cl. 128-303.100.
Lo, Cheng F.: *See—*
Hearon, William M.; and Lo, Cheng F., 4,208,350, Cl. 568-324.000.
Lo, David S.: *See—*
Paul, Maynard C.; and Lo, David S., 4,208,725, Cl. 365-87.000.
Lobisch, Gunter: *See—*
Castriotta, Michele; de Bosio, Alfredo; De Micheli, Spiridione; Lobisch, Gunter; Manucci, Franco; and Semprini, Pio, 4,208,552, Cl. 179-175.20D.
Lockett, James F.; Mehrkam, Thomas O.; and Braham, Richard R. M., to Geosource, Inc. Sorting apparatus. 4,207,985, Cl. 209-564.000.
Loersch, Joseph F.: *See—*
Barlow, Melvin C.; Loersch, Joseph F.; and Basche, Malcolm, deceased, 4,208,222, Cl. 148-6.000.
Lofthouse, Charles H.; Bell, David G.; and Phillips, Leyland R., to English Clays Lovering Pochin & Company Limited. Rotary reciprocating magnetic separator with upward feed. 4,208,277, Cl. 209-223.00A.
Logic Devices, Inc.: *See—*
Allen, Paul E., 4,208,177, Cl. 425-404.000.
Lohning, Franklin M.: *See—*
Davies, Philip H.; and Lohning, Franklin M., 4,208,158, Cl. 414-22.000.
Lokey, Burke P., to Westvaco Corporation. Hosiery banding apparatus. 4,208,234, Cl. 156-351.000.
Long-Lok Fasteners Corporation: *See—*
Bowman, James L.; and Rowley, Terry J., 4,207,832, Cl. 118-212.000.
Lord, Henry A.: *See—*
Bixler, Kenneth D.; Ralphs, Robert E.; Lord, Henry A.; and Reifers, Richard F., 4,208,006, Cl. 229-2.50R.
L'Oreal: *See—*
Bore, Pierre; and Tourenq, Lucienne, 4,208,402, Cl. 424-70.000.
Grollier, Jean F.; and Fourcadier, Chantal, 4,208,183, Cl. 8-409.000.
Lorenz, Rainer, to Palitex Project Company GmbH. Process and apparatus for bulking textile yarns. 4,207,730, Cl. 57-351.000.
Lott, Walter E.: *See—*
Hyler, John H.; Lott, Walter E.; and Johnson, Clifford E., 4,207,691, Cl. 37-124.000.
Hyler, John H.; Lott, Walter E.; and Johnson, Clifford E., 4,207,692, Cl. 37-129.000.
Lotz, Robert W.; and Westerman, David J., to Singer Company, The. Edge smoothing for real-time simulation of a polygon face object system as viewed by a moving observer. 4,208,719, Cl. 364-515.000.
Louie, Henry: *See—*
Youdin, Myron; Clagnaz, Mario W., Jr.; and Louie, Henry, 4,207,959, Cl. 180-167.000.
Love, Robert D.: *See—*
Gladstein, Leo A.; Love, Robert D.; and Martin, Larry C., 4,208,595, Cl. 307-297.000.
Lovgren, Sten. Device for transferring load units. 4,208,160, Cl. 414-347.000.
Lu, Shyue-Ching; Lee, Lin-nan; and Fang, Russell J. F., to Communications Satellite Corporation. Integrated encryption and channel coding technique. 4,208,739, Cl. 375-2.000.
Lubrizol Corporation, The: *See—*
Hoke, Donald I., 4,208,357, Cl. 260-978.000.
Lucas Industries Limited: *See—*
Draper, Geoffrey R., 4,208,704, Cl. 362-297.000.
Lintott, Edward R., 4,207,775, Cl. 74-55.000.
Phillips, Edward G., 4,207,853, Cl. 123-179.00B.
Lummus Company, The: *See—*
Sze, Morgan C., 4,208,191, Cl. 48-210.000.
Lundberg, Robert D.; Bock, Jan; and Makowski, Henry S., to Exxon Research & Engineering Co. Elastomeric blend compositions of a sulfonated elastomer polymer. 4,208,310, Cl. 260-23.50A.
Lundquist Tool & Mfg. Co., Inc.: *See—*
Rozentals, Alfreds, 4,207,659, Cl. 29-149.50B.
Lupin, Vladimir A.: *See—*
Svetlov, Sergei A.; Mokin, Valentin S.; Shneiderman, Mark S.; Selnitsyn, Mikhail G.; Lupin, Vladimir A.; Penyaskin, Timofei I.; Stepanov, Gennady P.; Reger, Ivan Y.; and Timkin, Nikolai I., 4,208,040, Cl. 266-121.000.
Lutz, Irvin H., to Arthur G. McKee & Company. Purification of coke. 4,208,307, Cl. 252-502.000.
Luxon, Bruce A.: *See—*
McVey, John K.; and Luxon, Bruce A., 4,208,647, Cl. 337-404.000.
Luzzi, John J.: *See—*
Ramey, Chester E.; and Luzzi, John J., 4,208,522, Cl. 544-385.000.
Lyall, Robert; Maxwell, Ian; and Buckle, Valerie A., to Wilkinson Sword Limited. Match splints and matches made therewith. 4,208,189, Cl. 44-42.000.
Lynch, Robert C.: *See—*
Kekas, Dennis H.; Lynch, Robert C.; Mathewson, James A.; McAdams, Ronald P.; and Pasterchick, Harry, Jr., 4,208,081, Cl. 339-31.00R.
Lynn, Merrill: *See—*
Claypoole, Stewart A.; Lynn, Merrill; and Miller, Roger A., 4,208,200, Cl. 65-11.00W.
Maassen, Jules B., to Paccar Inc. Lightweight fifth wheel mechanism. 4,208,062, Cl. 280-434.000.
Maccherone, Lawrence: *See—*
D'Angelo, Joseph J.; and Maccherone, Lawrence, 4,207,667, Cl. 29-417.000.
Machida, Hazime: *See—*
Kuzuwata, Masayuki; Machida, Hazime; Tamura, Hiroshi; and Saito, Tadashi, 4,208,212, Cl. 106-2.000.
Mackay, Donald A. M.: *See—*
Friello, Dominick R.; Witzel, Frank; Clark, K. Warren; and Mackay, Donald A. M., 4,208,431, Cl. 426-3.000.
MacKenzie, Kenneth R.: *See—*
Arnush, Donald; MacKenzie, Kenneth R.; and Wuerker, Ralph F., 4,208,582, Cl. 250-291.000.
MacMaster, Edward, to Rexnord Inc. Self-aligning quarter-turn fastener assembly. 4,207,655, Cl. 24-221.00R.
Maeda, Hirokazu: *See—*
Takata, Yataro; Takenoshita, Yukinori; Sasahara, Kiyoshi; Shigaki, Akira; Hirai, Kazuo; Maeda, Kosei; Tadokuro, Hideo; and Maeda, Hirokazu, 4,207,807, Cl. 92-128.000.
Maeda, Kosei: *See—*
Takata, Yataro; Takenoshita, Yukinori; Sasahara, Kiyoshi; Shigaki, Akira; Hirai, Kazuo; Maeda, Kosei; Tadokuro, Hideo; and Maeda, Hirokazu, 4,207,807, Cl. 92-128.000.
Maeda, Kunio: *See—*
Chono, Masazumi; Maeda, Kunio; and Saito, Kunio, 4,208,320, Cl. 260-45.8NT.
Maeda, Masao: *See—*
Noborio, Ken-Ichi; and Maeda, Masao, 4,208,432, Cl. 426-4.000.
Magarian, Gerald M., to Ameron, Inc. Impregnating a fibrous web with liquid. 4,208,230, Cl. 156-184.000.
Maggio, Edward T.: *See—*
Zuk, Robert F.; and Maggio, Edward T., 4,208,479, Cl. 435-7.000.
Mahle GmbH: *See—*
Schlotterbeck, Manfred, 4,207,844, Cl. 123-32.00B.
Maillard, Jacques; Delaunay, Pierre; and Legeai, Jacky, to Laboratoires Jacques Logeais. New benzo [d] thiazole derivatives, process for their preparation and their therapeutic applications. 4,208,420, Cl. 424-270.000.
Makhanek, Mikhail E.: *See—*
Andrev, Anatoly G.; Makhanek, Mikhail E.; and Rubinchik, Ilya A., 4,207,669, Cl. 29-564.500.
Makowski, Henry S.: *See—*
Lundberg, Robert D.; Bock, Jan; and Makowski, Henry S., 4,208,310, Cl. 260-23.50A.
Makuch, John A.: *See—*
Monaghan, Kevin J.; Schwickert, Russell C.; and Makuch, John A., 4,208,092, Cl. 350-96.210.
Maldonato, Eugene D.: *See—*
Derderian, George; Mohon, Windell N.; Maldonato, Eugene D.; and Rodemann, Alfred H., 4,207,688, Cl. 35-12.00N.
Malec, Robert E., to Ethyl Corporation. Diesel fuels having anti-wear properties. 4,208,190, Cl. 44-53.000.

Malsot, Christian, to Socapex. Connector for an optical monofibre. 4,208,095, Cl. 350-96.210.

Mamajek, Ronald C.; and Moyer, Ernest S., to McNeilab, Inc. Drug-dispensing device and method. 4,207,890, Cl. 128-223.000.

Manucci, Franco: *See—*
Castriotta, Michele; de Bosio, Alfredo; De Micheli, Spiridione; Lobisch, Gunter; Manucci, Franco; and Semprini, Pio, 4,208,552, Cl. 179-175.20D.

Maquet, Nestor: *See—*
Dauphin, Rene; and Maquet, Nestor, 4,208,462, Cl. 428-265.000.

Marietta, Cesar: *See—*
Moumaneix, Francis; and Marietta, Cesar, 4,208,571, Cl. 219-227.000.

Markkanen, Carl O.; Benson, William G.; and Goldstein, Amnon, to Sweda International, Inc. Document reading system. 4,208,009, Cl. 235-475.000.

Marleau, Gilles. Flexibly-hinged triangular collapsible net assembly. 4,207,700, Cl. 43-12.000.

Marley Company, The: *See—*
Bugler, Thomas W., III; and Fritz, Gerald D., 4,208,359, Cl. 261-111.000.

Marquardt, Arthur F. Bathtub aerator. 4,207,877, Cl. 128-66.000.

Marshall, Alan: *See—*
Dingwall, John G.; Cook, Barry; and Marshall, Alan, 4,208,344, Cl. 260-502.40R.

Marshall, Robert, to A. C. Nielsen Company. Method and apparatus for identifying images. 4,208,652, Cl. 340-146.30Y.

Marshall, Winston S.: *See—*
Zimmerman, Dennis M.; and Marshall, Winston S., 4,208,524, Cl. 546-144.000.

Martens, Gerhard: *See—*
Turk, Herbert; Honigmann, Gunter; Martens, Gerhard; and Schewe, Lothar, 4,208,560, Cl. 219-10.49R.

Martin, Ben: *See—*
Hansen, Robert N., 4,208,065, Cl. 280-507.000.

Martin, Eugene R., to SWS Silicones Corporation. Epoxy-functional polysiloxane polymers. 4,208,503, Cl. 528-14.000.

Martin, Jerry R.: *See—*
Carney, Ronald E.; Martin, Jerry R.; McAlpine, James B.; and Tadanier, John S., 4,208,407, Cl. 424-180.000.

Martin, Larry C.: *See—*
Gladstein, Leo A.; Love, Robert D.; and Martin, Larry C., 4,208,595, Cl. 307-297.000.

Martinez, Louis, to Altran Electronics, Inc. Narrow band paging or control radio system. 4,208,630, Cl. 375-7.000.

Martner, John G., to Dukane Corporation. Ultrasonic metal welding apparatus. 4,208,001, Cl. 228-1.00R.

Maruhashi, Motokazu; Ebina, Yoshio; and Ohnishi, Kizo, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Dispersing stabilizer for suspension polymerization of vinyl compounds. 4,208,499, Cl. 526-202.000.

Maruko, Shuji U.: *See—*
Reed, Jerry A.; Van Delden, Ronald; Waring, Winfred F.; and Maruko, Shuji U., 4,207,795, Cl. 89-1.813.

Marwitz, Heinrich: *See—*
Hockemeyer, Friedrich; Hechtl, Wolfgang; Marwitz, Heinrich; and Hittmair, Paul, 4,208,504, Cl. 528-15.000.

Maschinenfabrik Augsburg-Nunberg Aktiengesellschaft: *See—*
Muller, Eckart, 4,208,014, Cl. 239-533.400.

Mase, Yoshio; Hayashi, Tadayoshi; Natsuume, Shinichi; Kobayashi, Yasuhisa; and Moriya, Yoshiyuki, to Honda Giken Kogyo Kabushiki Kaisha. Method of fabricating a catalyst converter for cleaning exhausts of cars. 4,207,661, Cl. 29-157.00R.

Mashimo, Satoshi: *See—*
Matsuo, Tadao; Mashimo, Satoshi; Takami, Eiichi; Mishima, Kyoichi; Namizashi, Hiroshi; Uenoyama, Etsuji; and Kakei, Masanori, 4,208,500, Cl. 526-217.000.

Mason, George W.: *See—*
Horwitz, E. Philip; and Mason, George W., 4,208,377, Cl. 423-8.000.

Massoubre, Jean-Marie, to Compagnie Generale des Etablissements Michelin. Continuous solution polymerization process. 4,208,498, Cl. 526-179.000.

Masters, Philip C., to McNeil Corporation. Mobile sewer cleaning and vacuum unit. 4,207,647, Cl. 15-302.000.

Mathewson, James A.: *See—*
Kekas, Dennis H.; Lynch, Robert C.; Mathewson, James A.; McAdams, Ronald P.; and Pasterchick, Harry, Jr., 4,208,081, Cl. 339-31.00R.

Matisa Materiel Industriel S.A.: *See—*
Cicin-Sain, Ivo, 4,207,820, Cl. 104-2.000.

Matla, Arno; Matthaei, Horst D.; and Zimmermann, Volker W., to International Business Machines Corporation. Disk storage apparatus having an electrically tuned head-carriage actuator. 4,208,685, Cl. 360-107.000.

Matovich, Edwin, to Thagard Technology Company. Reactor-tube assembly for fluid-wall reactors for high temperature chemical reaction processes. 4,208,373, Cl. 422-129.000.

Matskevich, Daniil D.: *See—*
Babanin, Boris I.; Glyanchenko, Vladimir D.; Grechanichenko, Grigory M.; Erkin, Leonid I.; Litvin, Evgeny M.; Matskevich, Daniil D.; Nefedov, Petr Y.; Pankratiev, Oleg N.; Dobrovolsky, Evgeny V.; Petrukhno, Anatoly S.; and Frumkin, Vladlen M., 4,208,250, Cl. 201-10.000.

Matsuda, Akihisa; and Iizima, Sigeru, to Agency of Industrial Science & Technology, Ministry of International Trade & Industry. Tunable optical device. 4,208,637, Cl. 331-94.50C.

Matsuda, Mutsuhide: *See—*
Ito, Fumio; Sunouchi, Akio; Matsuda, Mutsuhide; Suzuki, Ryoichi; Uchiyama, Takashi; and Watanabe, Yoshiaki, 4,208,110, Cl. 354-31.000.

Matsumoto, Shinichi: *See—*
Hori, Ryuzo; Uchida, Kiyoshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; and Wakisaka, Hiroshi, 4,208,265, Cl. 204-195.00S.

Matsuo, Tadao; Mashimo, Satoshi; Takami, Eiichi; Mishima, Kyoichi; Namizashi, Hiroshi; Uenoyama, Etsuji; and Kakei, Masanori, to Mitsubishi Belting Limited. Acrylic copolymer vulcanizates. 4,208,500, Cl. 526-217.000.

Matsushita Electric Industrial Company, Limited: *See—*
Takeshita, Isao; Wakamatsu, Nobuhiko; Ando, Eiji; and Tanaka, Hiroyoshi, 4,207,744, Cl. 62-2.000.

Matsuura, Susumu: *See—*
Oikawa, Mitsuhiro; and Matsuura, Susumu, 4,208,299, Cl. 252-301.60S.

Matsuyama, Kiyoshi, to Sumitomo Chemical Company, Limited. Process for the recovery of atactic polymers. 4,208,530, Cl. 528-501.000.

Matsuzaka, Eiichi: *See—*
Sato, Atsushi; Shimizu, Isoo; and Matsuzaka, Eiichi, 4,208,268, Cl. 208-46.000.

Mattel, Inc.: *See—*
Lambert, Gerard L.; and Cook, John S., 4,207,935, Cl. 144-1.00R.

Matthaei, Horst D.: *See—*
Matla, Arno; Matthaei, Horst D.; and Zimmermann, Volker W., 4,208,685, Cl. 360-107.000.

Mattori, Hiroaki, to Sharp Kabushiki Kaisha. Taxi drive condition recorder system. 4,208,664, Cl. 346-15.000.

Maurice, Terrence J.: *See—*
Murray, E. Donald; Maurice, Terrence J.; Barker, Larry D.; and Myers, Chester D., 4,208,323, Cl. 260-112.00G.

Mauser Kommandit-Gesellschaft: *See—*
Przytulla, Dietmar, 4,208,178, Cl. 425-467.000.

Maxwell, Donald J.; and Crisp, David J., to Sterling Drug Inc. Flip top container. 4,207,982, Cl. 206-534.000.

Maxwell, Ian: *See—*
Lyall, Robert; Maxwell, Ian; and Buckle, Valerie A., 4,208,189, Cl. 44-42.000.

Mazzini, Carl A.: *See—*
Haas, Robert N.; and Mazzini, Carl A., 4,207,687, Cl. 35-12.00R.

McAdams, Ronald P.: *See—*
Kekas, Dennis H.; Lynch, Robert C.; Mathewson, James A.; McAdams, Ronald P.; and Pasterchick, Harry, Jr., 4,208,081, Cl. 339-31.00R.

McAlexander, Richard M.: *See—*
Gomes, John M.; O'Keefe, Daniel A.; and McAlexander, Richard M., 4,208,275, Cl. 209-167.000.

McAlpine, James B.: *See—*
Carney, Ronald E.; Martin, Jerry R.; McAlpine, James B.; and Tadanier, John S., 4,208,407, Cl. 424-180.000.

McClain, Dorothee M., to National Distillers and Chemical Corporation. Process of preparing finely divided thermoplastic resins. 4,208,528, Cl. 528-487.000.

McClure, George, to McClure, George; and Morrow, David C. Method for the removal of carbonyl sulfide from liquid propane. 4,208,541, Cl. 585-860.000.

McColl, Bruce J., to Owens-Illinois, Inc. Apparatus for individually steering and driving vehicle wheels. 4,207,956, Cl. 180-24.000.

McConnell, Albert L.: *See—*
Becker, Henry E.; McConnell, Albert L.; and Schutte, Richard W., 4,208,459, Cl. 428-154.000.

McCormick, John A.: *See—*
Gray, Stanley; and McCormick, John A., 4,208,076, Cl. 308-9.000.

McElroy, David J., to Texas Instruments Incorporated. Programming of semiconductor read only memory. 4,208,726, Cl. 365-104.000.

McFarlin, David J., to United Technologies Corporation. Cryopump. 4,207,746, Cl. 62-55.500.

McGinnis, James P.; and Zylstra, Henry J., to Square D Company. Circuit breaker having an electronic fault sensing and trip initiating unit. 4,208,690, Cl. 361-48.000.

McGinnis, James P.: *See—*
Dickens, James W.; McGinnis, James P.; and Zylstra, Henry J., 4,208,693, Cl. 361-94.000.
Dunham, Robert W.; McGinnis, James P.; and Zylstra, Henry J., 4,208,689, Cl. 361-48.000.

McIntosh, Russell J.: *See—*
Schaaf, Cecil; McIntosh, Russell J.; and Morton, David C., 4,207,718, Cl. 52-585.000.

McKay, Dwight L., to Phillips Petroleum Company. Passivating metals on cracking catalysts. 4,208,302, Cl. 252-411.00R.

McKendry, Lennon H.; and Bland, Walter P., to Dow Chemical Company, The. 4(3H)-Oxobenzo-2,1,3-thiadiazine-2,2-dioxides. 4,208,514, Cl. 544-11.000.

McKenney, Samuel R.: *See—*
Cooper, Erwin E.; and McKenney, Samuel R., 4,208,087, Cl. 350-16.000.

McLoughlin, Robert W.; and Nuttall, Colin P., to Gallaher Limited. Optical inspection apparatus. 4,208,578, Cl. 250-214.0AG.

McMahon, Donald H., to Sperry Corporation. Fingerprint identification by ridge angle and minutiae recognition. 4,208,651, Cl. 340-146.30E.

McNeil Corporation: *See*—
Masters, Philip C., 4,207,647, Cl. 15-302.000.
McNeilab, Inc.: *See*—
Mamajek, Ronald C.; and Moyer, Ernest S., 4,207,890, Cl. 128-223.000.
McOwen, Sherwood A., Jr., to Raytheon Company. Radio frequency ring-shaped slot antenna. 4,208,660, Cl. 343-769.000.
McVey, Charles I.; and Datta, Ranajit K., to General Electric Company. Alumina, calcia, baria sealing composition optionally modified with B_2O_3. 4,208,605, Cl. 313-221.000.
McVey, John K.; and Luxon, Bruce A., to Illinois Tool Works Inc. Thermal switch with organic-glass bead mixture sensing pellet. 4,208,647, Cl. 337-404.000.
Mead Corporation, The: *See*—
Paranjpe, Suresh C., 4,208,666, Cl. 346-75.000.
Meadows, Lacy C.: *See*—
Wald, Herbert; Young, Harold K.; and Meadows, Lacy C., 4,207,831, Cl. 118-63.000.
Mechanical Technology Incorporated: *See*—
Gray, Stanley; and McCormick, John A., 4,208,076, Cl. 308-9.000.
Mediscan, Inc.: *See*—
Stoller, Milton, 4,207,772, Cl. 73-620.000.
Stoller, Milton, 4,208,602, Cl. 310-335.000.
Medtronic, Inc.: *See*—
O'Neill, Edward G., 4,207,903, Cl. 128-785.000.
Smith, Bobby L., 4,208,008, Cl. 371-15.000.
Mehalchick, Emil J.: *See*—
Kleiner, Richard N.; and Mehalchick, Emil J., 4,208,215, Cl. 106-73.300.
Mehls, William L. Building construction. 4,207,714, Cl. 52-79.900.
Mehrkam, Thomas O.: *See*—
Lockett, James F.; Mehrkam, Thomas O.; and Braham, Richard R. M., 4,207,985, Cl. 209-564.000.
Meiri, Samuel; Kot, Casey; Rogers, B. H. Gerald; and Epstein, Max, to Northwestern University. Device and method for advancing an endoscope through a body passage. 4,207,872, Cl. 128-4.000.
Meister, Robert L.; and Orr, Monte A., to Meister, Robert L. Towable swimmer-controlled aquatic plane device. 4,207,829, Cl. 114-245.000.
Melgaard, Hans L., to Despatch Industries, Inc. Oven. 4,208,572, Cl. 219-400.000.
Melilli, Albert S.: *See*—
Fischer, George A.; Walter, Robert A.; and Melilli, Albert S., 4,207,864, Cl. 126-285.00R.
Mendenhall, Robert L. Asphaltic concrete patch mixing and heating apparatus and method. 4,208,131, Cl. 366-7.000.
Menge, Gunter: *See*—
Tolasch, Gerhard; Schubert, Bernhard; and Menge, Gunter, 4,207,720, Cl. 53-151.000.
Mennucci, Donald F.: *See*—
Auman, John T.; Mennucci, Donald F.; and Ricketts, James B., Jr., 4,208,266, Cl. 204-195.00S.
Mepla Inc.: *See*—
Lautenschlager, Horst, 4,207,652, Cl. 16-130.000.
Merck & Co., Inc.: *See*—
Baldwin, John J., 4,208,416, Cl. 424-263.000.
Christensen, Burton G.; and Leanza, William J., 4,208,330, Cl. 260-326.310.
Christensen, Burton G.; and Shih, David H., 4,208,422, Cl. 424-274.000.
Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., 4,208,413, Cl. 424-250.000.
Merritt, James A., to United States of America, Army. HF or DF Chemical laser using laser induced chemistry. 4,208,638, Cl. 331-94.50G.
Messenger, David F.: *See*—
Moudgil, Brij M.; and Messenger, David F., 4,208,273, Cl. 209-3.300.
Messenger, Edward J., to Garlock Inc. Semi-unitized shaft seal and method. 4,208,057, Cl. 277-37.000.
Mester, Heinz: *See*—
Vogler, Gerd; and Mester, Heinz, 4,208,584, Cl. 250-402.000.
Metzger, Karl G.: *See*—
Preiss, Michael; and Metzger, Karl G., 4,208,412, Cl. 424-250.000.
Meyer, Walter W. Fireplace cooking range and room air heater. 4,207,862, Cl. 126-137.000.
Meylan, Pierre, to BBC Brown Boveri & Company Limited. Method of joining shaft sections. 4,208,003, Cl. 228-169.000.
Michael Weinig Kommanditgesellschaft: *See*—
Betzler, Otto; and Kunzig, Adalbert, 4,207,709, Cl. 51-100.00R.
Michaels, Alan S., to Alza Corporation. Device using hydrophilic polymer for delivering drug to biological environment. 4,207,893, Cl. 128-260.000.
Michalski, Gunter: *See*—
Hoffken, Erich; Kleine-Kleffmann, Werner; Bertram, Rolf; Abele, Karl-Heinz; and Michalski, Gunter, 4,208,039, Cl. 266-50.000.
Michne, William F.; and Lewis, Thomas R., to Sterling Drug Inc. 11-Lower-alkyl-, 11-phenyl-lower-alkyl- and 11-cyclo-lower-alkyl-lower-alkyl-hexahydro-2,6-methano-3-benzazocines. 4,208,523, Cl. 546-97.000.
Micro-Gen Equipment Corporation: *See*—
Coleman, Bobby W.; Frassanito, John R.; Norman, Richard O.; and Parke, James G., 4,208,013, Cl. 239-351.000.
Micro Sensors, Inc.: *See*—
Piso, John S., 4,208,625, Cl. 324-61.00R.
Miki, Toshio, to Koyo Seiko Company Limited. Cylindrical roller bearings. 4,208,078, Cl. 308-217.000.
Mill Printing and Lithographing Corporation: *See*—
Kelly, Robert E.; and Friedman, Nathan, 4,207,984, Cl. 206-554.000.
Miller, Donald E.: *See*—
Gilmore, Cecilia; and Miller, Donald E., 4,208,444, Cl. 426-570.000.
Miller, Gabriel L., to Bell Telephone Laboratories, Incorporated. Method and apparatus for investigating dielectric semiconductor materials. 4,208,624, Cl. 324-60.00R.
Miller, Roger A.: *See*—
Claypoole, Stewart A.; Lynn, Merrill; and Miller, Roger A., 4,208,200, Cl. 65-11.00W.
Mills, Manuel D. Dynamometer for monitoring sucker rod strings. 4,208,665, Cl. 346-33.0WL.
Mimura, Akitoshi: *See*—
Fujiki, Norio; Baba, Kousaku; and Mimura, Akitoshi, 4,208,658, Cl. 343-7.0VM.
Mimura, Yoshiyuki: *See*—
Hase, Takashi; Kagami, Akiyasu; Mimura, Yoshiyuki; Narita, Kinichiro; and Hiraki, Minoru, 4,208,612, Cl. 313-495.000.
Hase, Takashi; Kagami, Akiyasu; Mimura, Yoshiyuki; Narita, Kinichiro; and Hiraki, Minoru, 4,208,613, Cl. 313-495.000.
Minami, Norio; Kijima, Shizumasa; Katayama, Satoshi; and Shionoya, Hiroshi, to Eisai Co., Ltd. Pyranochromone derivatives and therapeutic composition comprising same for treatment of allergic diseases. 4,208,426, Cl. 424-283.000.
Miner, Keith E.: *See*—
Ehrenthal, Irving; and Miner, Keith E., 4,208,482, Cl. 435-178.000.
Mineur, Andre, to Mineur-Becourt SA. Closing device with valve having a high speed reaction. 4,208,032, Cl. 251-69.000.
Mineur-Becourt SA: *See*—
Mineur, Andre, 4,208,032, Cl. 251-69.000.
Minnesota Mining and Manufacturing Company: *See*—
Errede, Louis A.; and Ronning, Patricia M., 4,207,705, Cl. 47-48.500.
Lindsay, Thomas W.; and Westberg, Walter M., 4,208,696, Cl. 361-212.000.
Nelson, Leigh E., 4,208,194, Cl. 55-158.000.
Minoura, Mikio: *See*—
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,207,849, Cl. 123-139.0AW.
Misencik, John J.; and Davidson, Ronnie D., to Westinghouse Electric Corp. Multipole ground fault circuit interrupter with trip level adjustment. 4,208,688, Cl. 361-46.000.
Mishima, Kyoichi: *See*—
Matsuo, Tadao; Mashimo, Satoshi; Takami, Eiichi; Mishima, Kyoichi; Namizashi, Hiroshi; Uenoyama, Etsuji; and Kakei, Masanori, 4,208,500, Cl. 526-217.000.
Misumi, Akira; and Kumada, Masaharu, to Hitachi, Ltd. Nickel alloy base metal plate for directly heated oxide cathodes. 4,208,208, Cl. 75-170.000.
Mita, Shigeru: *See*—
Iwamoto, Minoru; Okamoto, Toyoo; and Mita, Shigeru, 4,208,122, Cl. 355-14.00R.
Mitchell, Norris W., to Phillips Petroleum Company. Energy recovery, sour gas stripping and caustic neutralization using combustion gases containing solids. 4,208,384, Cl. 423-220.000.
Mitsubishi Belting Limited: *See*—
Matsuo, Tadao; Mashimo, Satoshi; Takami, Eiichi; Mishima, Kyoichi; Namizashi, Hiroshi; Uenoyama, Etsuji; and Kakei, Masanori, 4,208,500, Cl. 526-217.000.
Mitsubishi Chemical Industries Limited: *See*—
Sawai, Masanobu; Sudo, Tadamitsu; and Enomoto, Shogo, 4,208,185, Cl. 23-230.00B.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Noda, Masahiro; and Takahashi, Ryoji, 4,208,695, Cl. 361-181.000.
Mitsui Petrochemical Industries Ltd.: *See*—
Kinoshita, Tatsuo; and Izumi, Takashi, 4,208,311, Cl. 260-29.2TN.
Mitsui Toatsu Chemicals Incorporated: *See*—
Kawamata, Motoo; Ohshima, Kazushi; Kudoh, Akihide; and Kotani, Makoto, 4,208,537, Cl. 568-804.000.
Mitsumoto, Norio; Ichioka, Satoshi; and Takeuchi, Shinjiro. Method of plating an iron-cobalt alloy on a substrate. 4,208,254, Cl. 204-43.00T.
Miwa, Naoki: *See*—
Ishizuka, Takashi; and Miwa, Naoki, 4,208,464, Cl. 428-377.000.
Miyagi, Hideo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Apparatus for controlling the amount of secondary air injection. 4,207,737, Cl. 60-276.000.
Miyamoto, Motomu. Switches. 4,208,557, Cl. 200-153.00R.
Mizuno, Masami: *See*—
Ikura, Katsuyata; Katsuura, Kiyoshi; Nakada, Akira; and Mizuno, Masami, 4,208,411, Cl. 424-245.000.
Mobil Oil Corporation: *See*—
Audeh, Costandi A.; and Yan, Tsoung Y., 4,208,263, Cl. 204-188.000.
Bridger, Robert F., 4,208,292, Cl. 252-32.70E.
Deutsch, Murray L., 4,208,712, Cl. 364-105.000.
Ruehle, William H., 4,208,732, Cl. 367-42.000.
Mocellin, Alain M.: *See*—
Canteloup, Jean; Mocellin, Alain M.; Braguier, Michel A.; and Tueta, Roger J., 4,207,834, Cl. 118-620.000.
Modica, Giovanni: *See*—
Giuffre, Luigi; Spaziante, Placido M.; Pozzi, Vittorio; and Modica, Giovanni, 4,208,455, Cl. 427-341.000.
Moen, George A. Container including a hinged flap valve assembly. 4,207,996, Cl. 222-507.000.

Moerkens, Jozef C., to U.S. Philips Corporation. Inductive stabilization ballast for a discharge lamp. 4,208,616, Cl. 315-106.000.
Mogab, Cyril J.: *See—*
Harshbarger, William R.; Levinstein, Hyman J.; Mogab, Cyril J.; and Porter, Roy A., 4,208,241, Cl. 156-643.000.
Mohon, Windell N.: *See—*
Derderian, George; Mohon, Windell N.; Maldonato, Eugene D.; and Rodemann, Alfred H., 4,207,688, Cl. 35-12.00N.
Mokin, Valentin S.: *See—*
Svetlov, Sergei A.; Mokin, Valentin S.; Shneiderman, Mark S.; Selnitsyn, Mikhail G.; Lupin, Vladimir A.; Penyaskin, Timofei I.; Stepanov, Gennady P.; Reger, Ivan Y.; and Timkin, Nikolai I., 4,208,040, Cl. 266-121.000.
Moldrup, Soren J., to A/S Dansk Spaendbeton. Receptacle having a circumferentially pre-stressed peripheral wall composed of concrete slabs. 4,207,716, Cl. 52-224.000.
Molins, Ltd.: *See—*
Dyett, Derek H., 4,207,907, Cl. 131-84.00B.
Mollendorf, Eckard: *See—*
Biesinger, Erwin; and Mollendorf, Eckard, 4,207,638, Cl. 8-150.000.
Moller, Rudolf: *See—*
Opel, Detlef; and Moller, Rudolf, 4,207,917, Cl. 137-269.000.
Mollet, Hans: *See—*
Haberli, Roland; Mollet, Hans; and Tempel, Christel, 4,208,370, Cl. 264-117.000.
Monaghan, Kevin J.; Schwickert, Russell C.; and Makuch, John A., to Bunker Ramo Corporation. Fiber optic multi-cable pair connector. 4,208,092, Cl. 350-96.210.
Monarch Marking Systems, Inc.: *See—*
Hamisch, Paul H., Jr., 4,207,818, Cl. 101-348.000.
Monsanto Company: *See—*
Howe, Robert K.; and Liu, Kou-Chang, 4,208,510, Cl. 548-247.000.
Montedison S.p.A.: *See—*
Pagani, Giorgio, 4,208,347, Cl. 260-555.00A.
Montzka, Thomas A.: *See—*
Crenshaw, Ronnie R.; and Montzka, Thomas A., 4,208,521, Cl. 544-250.000.
Mookherjee, Braja D.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,208,297, Cl. 252-174.110.
Withycombe, Donald A.; Mookherjee, Braja D.; Vock, Manfred H.; and Vinals, Joaquin F., 4,207,905, Cl. 131-17.00R.
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,208,296, Cl. 252-174.110.
Moore, Walter W.: *See—*
Evans, David N.; Moore, Walter W.; and Ng, Jean L., 4,208,442, Cl. 426-296.000.
Morawski, London T. Chuck with retractable stop. 4,208,061, Cl. 279-2.00R.
Morelle, Jean; and Lauzanne-Morelle, Eliane. Therapeutic compositions for the treatment of connective tissues diseases. 4,208,421, Cl. 424-274.000.
Morino, Yukio: *See—*
Kitai, Kiyoshi; Morino, Yukio; Kato, Shogo; and Watanabe, Masanori, 4,208,111, Cl. 354-33.000.
Moriya, Yoshiyuki: *See—*
Mase, Yoshio; Hayashi, Tadayoshi; Natsuume, Shinichi; Kobayashi, Yasuhisa; and Moriya, Yoshiyuki, 4,207,661, Cl. 29-157.00R.
Morris, Jesse L., to General Electric Company. Apparatus for die stamping battery container can ends. 4,207,812, Cl. 101-4.000.
Morrow, David C.: *See—*
McClure, George, 4,208,541, Cl. 585-860.000.
Morse, John E., to Eastman Kodak Company. Method and apparatus for opening a film cartridge. 4,208,116, Cl. 354-275.000.
Mortl, Gunther L.: *See—*
Stein, Joseph L.; Russell, George A., Jr.; and Mortl, Gunther L., 4,208,214, Cl. 106-56.000.
Morton, David C.: *See—*
Schaaf, Cecil; McIntosh, Russell J.; and Morton, David C., 4,207,718, Cl. 52-585.000.
Mortus, Harold J., to Lamson & Sessions Co., The. Locknut. 4,207,938, Cl. 151-21.00B.
Morucci, Jean-Pierre: *See—*
Bajon, Jean; Cattoen, Michel; Douchez, Jacques; and Morucci, Jean-Pierre, 4,208,675, Cl. 358-93.000.
Motoren- und Turbinen-Union Friedrichshafen GmbH: *See—*
Dinger, Hans; and Deutschmann, Herbert, 4,207,848, Cl. 123-122.00D.
Motorola, Inc.: *See—*
Beseke, Kermit M.; Hoffmann, James E.; and Kopecki, Ronald J., 4,208,631, Cl. 455-92.000.
Motosko, Stephen J., II. Traction device. 4,207,939, Cl. 152-221.000.
Motosugi, Katsuhiko: *See—*
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,207,849, Cl. 123-139.0AW.
Moudgil, Brij M., to Occidental Research Corporation. Separation of limestone from limestone ore. 4,208,272, Cl. 209-3.300.
Moudgil, Brij M.; and Messenger, David F., to Occidental Research Corporation. Separation of coal from waste material. 4,208,273, Cl. 209-3.300.
Moumaneix, Francis; and Marietta, Cesar, to Anciens Etablissements Leon Guilbert & Fils. Heat shielded handle for an electrically heated hand tool. 4,208,571, Cl. 219-227.000.
Moyer, Ernest S.: *See—*
Mamajek, Ronald C.; and Moyer, Ernest S., 4,207,890, Cl. 128-223.000.
Moyer, Norman E., to Hughes Aircraft Company. LED Digital watch with user control of display timing and brightness. 4,207,734, Cl. 368-83.000.
Mrazek, Josef: *See—*
Polak, Josef; and Mrazek, Josef, 4,208,264, Cl. 204-195.00C.
Mulach, Arthur; and Jones, Warren W., to Westinghouse Electric Corp. Stator core cooling for dynamoelectric machines. 4,208,597, Cl. 310-59.000.
Muller, Eckart, to Maschinenfabrik Augsburg-Nunberg Aktiengesellschaft. Fuel injector for internal combustion engines. 4,208,014, Cl. 239-533.400.
Muller, Jugen, to AGFA-Gevaert, A.G. Method and apparatus for building up and reducing the pressure of gases in ionography imaging chambers. 4,207,910, Cl. 137-14.000.
Muller, Jurgen, to AGFA-Gevaert, A.G. Apparatus for developing latent images of X-rayed objects on dielectric receptor sheets. 4,208,121, Cl. 355-10.000.
Muller, Karl-Hans; and Tailfer, Roland, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Shoe cream polish composition. 4,208,213, Cl. 106-10.000.
Mumura, Akitoshi: *See—*
Sugasawa, Fukashi; Fukasawa, Noburu; Iizuka, Haruhiko; and Mumura, Akitoshi, 4,207,856, Cl. 123-198.00F.
Munroe, Thomas N.: *See—*
Comerford, Matthias F.; Munroe, Thomas N.; and O'Rourke, Harold T., 4,208,002, Cl. 228-37.000.
Munsch, John M.; and Wolf, Ludwig, Jr., to Baxter Travenol Laboratories, Inc. Cardiotomy reservoir having two-stage defoaming means. 4,208,193, Cl. 55-36.000.
Murakami, Keiji, to Kabushiki Kaisha Kawai Gakki Seisakusho. Automatic tuning device. 4,207,791, Cl. 84-1.010.
Murib, Jawad H., to National Distillers and Chemical Corporation. Process for preparing ethylene glycol esters. 4,208,534, Cl. 560-246.000.
Murphy, Ralph W. Magnetic strip attachment for signs. 4,207,697, Cl. 40-600.000.
Murray, E. Donald; Maurice, Terrence J.; Barker, Larry D.; and Myers, Chester D., to General Foods, Limited. Process for isolation of proteins using food grade salt solutions at specified pH and ionic strength. 4,208,323, Cl. 260-112.00G.
Murray, Ronald M., to Badger Company, Inc., The. Heat exchanger system. 4,208,529, Cl. 528-501.000.
Muzio, Lawrence J.: *See—*
Arand, John K.; Muzio, Lawrence J.; and Sotter, John G., 4,208,386, Cl. 423-235.000.
Myers, Chester D.: *See—*
Murray, E. Donald; Maurice, Terrence J.; Barker, Larry D.; and Myers, Chester D., 4,208,323, Cl. 260-112.00G.
Myers, Harry K., Jr.; and Schneider, Abraham, to Suntech, Inc. Dimerization of norbornadiene to Binor-S with a homogeneous catalyst. 4,208,355, Cl. 585-362.000.
N L Industries, Inc.: *See—*
Bergfeld, Robert A.; Patel, Shashi P.; and Schlickenrieder, Lynn M., 4,208,496, Cl. 525-3.000.
Nadelson, Jeffrey, to Sandoz, Inc. 5-Phenacyl-3-phenyl-4-isoxazole carboxamides. 4,208,532, Cl. 548-248.000.
Nagy, Jozsef: *See—*
Rozsa, Laszlo; Petocz, Lujza; Grasser, Katalin; Kosoczky, Ibolya; Kiszelly, Eniko; and Nagy, Jozsef, 4,208,410, Cl. 424-244.000.
Nahta, Roop C., to GAF Corporation. Foaming composition for textile finishing and coatings. 4,208,485, Cl. 521-65.000.
Naimer, Hubert Laurenz: *See—*
Alsch, Gottfried, 4,208,558, Cl. 200-296.000.
Nakada, Akira: *See—*
Ikura, Katsuyata; Katsuura, Kiyoshi; Nakada, Akira; and Mizuno, Masami, 4,208,411, Cl. 424-245.000.
Nakai, Hisao: *See—*
Kurono, Masayasu; Hamanaka, Nobuyuki; Sakuyama, Shigeru; Chiba, Takeshi; and Nakai, Hisao, 4,208,428, Cl. 424-305.000.
Nakamura, Toshio: *See—*
Sasaki, Yutaka; Ikeda, Yoneichi; Tashiro, Masaharu; and Nakamura, Toshio, 4,208,303, Cl. 252-417.000.
Nakane, Hisashi: *See—*
Uehara, Akira; and Nakane, Hisashi, 4,208,159, Cl. 414-225.000.
Nakao, Toshihiro: *See—*
Sato, Masanobu; Satoh, Ken; Nakao, Toshihiro; and Furuta, Kenzi, 4,208,686, Cl. 360-137.000.
Nakayasu, Michiharu; Kumamoto, Kenzo; Suzuki, Kenji; Kuba, Arata; and Kitagawa, Katsushi, to Ube Industries, Ltd. Mixed-firing burners for use with pulverized coal and heavy oil. 4,208,180, Cl. 431-284.000.
Nakazato, Norio; Saho, Norihide; Yoshimatsu, Sachihiro; and Okabe, Michimasa, to Hitachi, Ltd. Process of and system for liquefying air to separate its component. 4,208,199, Cl. 62-29.000.
Nalco Chemical Co.: *See—*
Allain, Ronald J.; Braithwaite, David G.; and Reid, Ansell L., 4,208,392, Cl. 423-497.000.
Namatame, Akemi, administratrix: *See—*
Wada, Takeshi; Kita, Hisanao; Okuni, Tetsuo; and Namatame, Yoshio, deceased, 4,208,564, Cl. 219-73.100.

Namatame, Yoshio, deceased: *See*—
Wada, Takeshi; Kita, Hisanao; Okuni, Tetsuo; and Namatame, Yoshio, deceased, 4,208,564, Cl. 219-73.100.
Namboodri, Chettoor G.: *See*—
Gregorian, Razmic S.; and Namboodri, Chettoor G., 4,208,173, Cl. 427-296.000.
Namiki, Naokuni, to Slidex Corporation. Slide file sheet. 4,207,980, Cl. 206-456.000.
Namizashi, Hiroshi: *See*—
Matsuo, Tadao; Mashimo, Satoshi; Takami, Eiichi; Mishima, Kyoichi; Namizashi, Hiroshi; Uenoyama, Etsuji; and Kakei, Masanori, 4,208,500, Cl. 526-217.000.
Nantermet, Roland: *See*—
Costantini, Michel; Dromard, Adrien; Jouffret, Michel; and Nantermet, Roland, 4,208,536, Cl. 568-771.000.
Napadow, Stanley C., to Protectaire Systems Co. Protected conveyor system. 4,207,833, Cl. 118-324.000.
Napierala, Gunter, to Gelenkwellenbau GmbH. Quick release clutch coupling. 4,208,150, Cl. 403-338.000.
Narasimhan, Tanjore R., to ILC Data Device Corporation. Novel hybrid packaging scheme for high density component circuits. 4,208,698, Cl. 361-414.000.
Narita, Kinichiro: *See*—
Hase, Takashi; Kagami, Akiyasu; Mimura, Yoshiyuki; Narita, Kinichiro; and Hiraki, Minoru, 4,208,612, Cl. 313-495.000.
Hase, Takashi; Kagami, Akiyasu; Mimura, Yoshiyuki; Narita, Kinichiro; and Hiraki, Minoru, 4,208,613, Cl. 313-495.000.
Nate, Kazuo; Kotsuka, Kyoko; and Isogai, Tokio, to Hitachi, Ltd. Method for mounting parts on circuit boards. 4,208,005, Cl. 228-175.000.
National Distillers and Chemical Corporation: *See*—
McClain, Dorothee M., 4,208,528, Cl. 528-487.000.
Murib, Jawad H., 4,208,534, Cl. 560-246.000.
National Patent Development Corporation: *See*—
LeFevre, Robert J., 4,208,365, Cl. 264-1.000.
Natsuume, Shinichi: *See*—
Mase, Yoshio; Hayashi, Tadayoshi; Natsuume, Shinichi; Kobayashi, Yasuhisa; and Moriya, Yoshiyuki, 4,207,661, Cl. 29-157.00R.
Naumann, Karlheinz, to Fichtel & Sachs AG. Sensor panel for locating a load. 4,208,648, Cl. 338-99.000.
Nauroth, Peter; Each, Heinz; Kuhlmann, Robert; Bode, Rudolf; Reisert, Arthur; Buhler, Harald; and Turk, Gunter, to Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler. Hydrophobic precipitated silicic acid and compositions containing same. 4,208,316, Cl. 260-37.0SB.
Naylor, Carter G., to Texaco Development Corp. Extraction method. 4,208,280, Cl. 210-22.00R.
NCR Corporation: *See*—
Liu, Chih H., 4,208,137, Cl. 400-124.000.
Nebgen, William H. Heat exchange device and method. 4,207,748, Cl. 62-115.000.
Necco, David A.: *See*—
Cope, Rick R.; and Rosengrants, Delbert L., 4,207,947, Cl. 168-29.000.
Neely, Raymond J., to Refreshment Machinery Incorporated. Dispensing canister with cooperating screw and agitator. 4,207,995, Cl. 222-231.000.
Nefedov, Petr Y.: *See*—
Babanin, Boris I.; Glyanchenko, Vladimir D.; Grechanichenko, Grigory M.; Erkin, Leonid I.; Litvin, Evgeny M.; Matskevich, Daniil D.; Nefedov, Petr Y.; Pankratiev, Oleg N.; Dobrovolsky, Evgeny V.; Petrukhno, Anatoly S.; and Frumkin, Vladlen M., 4,208,250, Cl. 201-10.000.
Neitzel, Daniel R., to International Harvester Company. Backhoe wedge locking mechanism. 4,208,162, Cl. 414-686.000.
Nelson, Leigh E., to Minnesota Mining and Manufacturing Company. Monitoring device. 4,208,194, Cl. 55-158.000.
Nelson, Norman A., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-3,7-inter-m-phenylene-ω-phenyl-PGF_2 compounds. 4,208,538, Cl. 568-807.000.
Nelson, Paul M., to Wilson Industries, Inc. Reversible baffle plate. 4,207,925, Cl. 138-44.000.
Nelson, Stephen J., to Upjohn Company, The. N-[(phosphinyl or phosphinothioyl)amino]thio-methylcarbamates and pesticidal methods. 4,208,409, Cl. 424-209.000.
Nerge, Steven F.: *See*—
Craig, James R.; and Nerge, Steven F., 4,208,586, Cl. 250-447.000.
Netto, Daniel J., to University of Southern California. Intravital microscope and barrel assembly and optical system therefor. 4,208,089, Cl. 350-46.000.
New York Institute of Technology: *See*—
Glenn, William E., Jr., 4,208,096, Cl. 350-96.250.
Nigam, Anant K., 4,207,901, Cl. 128-660.000.
New York University: *See*—
Youdin, Myron; Clagnaz, Mario W., Jr.; and Louie, Henry, 4,207,959, Cl. 180-167.000.
Newton, Ralph E., to Westinghouse Electric Corp. Filament-support means for a tubular incandescent lamp. 4,208,606, Cl. 313-274.000.
Ng, Jean L.: *See*—
Evans, David N.; Moore, Walter W.; and Ng, Jean L., 4,208,442, Cl. 426-296.000.
Nguyen Duc, Xuong, to Institut Francais du Petrole. Floating terminal for loading and/or unloading tankers. 4,207,639, Cl. 9-8.00P.
Nichols, Colin J.: *See*—
Prouty, Myron R.; Nichols, Colin J.; Brown, Norman A.; and Sutter, Stephen P., 4,207,988, Cl. 215-232.000.
Nicholson, William R., to Dow Corning Corporation. Flow aid. 4,208,388, Cl. 423-268.000.
Nicklas, Alexander: *See*—
Becker, Karl-Heinz; Knopfel, Hans-Dieter; Nicklas, Alexander; Hergt, Peter; and Diler, Engin, 4,208,169, Cl. 416-185.000.
Niebur, Mark J. Beehive. 4,207,637, Cl. 6-1.000.
Niemi, Allan J., to Weyerhaeuser Company. Apparatus for flanging can bodies. 4,207,761, Cl. 72-354.000.
Niemi, Tom O.: *See*—
Hamalainen, Matti J.; Rastas, Jussi K.; Tiitinen, Heikki A.; and Niemi, Tom O., 4,208,380, Cl. 423-143.000.
Nigam, Anant K., to New York Institute of Technology. Ultrasound reflector. 4,207,901, Cl. 128-660.000.
Nihon Radiator Co., Ltd.: *See*—
Takenaka, Hitoshi, 4,207,662, Cl. 29-157.30C.
Nikko Seiki Company Limited: *See*—
Okumura, Akio, 4,207,676, Cl. 30-419.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Ogita, Minoru, 4,208,663, Cl. 343-853.000.
Nippon Genshiryoku Jigyo Kabushiki Kaisha: *See*—
Irie, Hiromitsu; Tajima, Fumio; Kuribayashi, Nobuhide; and Isozaki, Kazuhisa, 4,208,298, Cl. 252-301.10W.
Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha: *See*—
Maruhashi, Motokazu; Ebina, Yoshio; and Ohnishi, Kizo, 4,208,499, Cl. 526-202.000.
Nippon Hoso Kyokai: *See*—
Suzuki, Fumiyoshi; Sasaki, Fumiyoshi; and Nishinomiya, Guen, 4,208,735, Cl. 367-136.000.
Nippon Oil Co., Ltd.: *See*—
Imaizumi, Masao; Yasuda, Mitsuo; Sakata, Ko; and Hirano, Noboru, 4,208,540, Cl. 585-809.000.
Nippon Petrochemicals Company, Limited: *See*—
Sato, Atsushi; Shimizu, Isoo; and Matsuzaka, Eiichi, 4,208,268, Cl. 208-46.000.
Nippon Soda Company Limited: *See*—
Ikura, Katsuyata; Katsuura, Kiyoshi; Nakada, Akira; and Mizuno, Masami, 4,208,411, Cl. 424-245.000.
Kiga, Shotaro; Yoshida, Naoshi; Edahiro, Kenichi; and Sakata, Tadashi, 4,208,246, Cl. 162-106.000.
Nippon Soken, Inc.: *See*—
Hattori, Tadashi; Kobashi, Mamoru; Kawase, Tooro; and Ueno, Yoshiki, 4,207,847, Cl. 123-117.00R.
Nishimura, Toshifumi: *See*—
Yoneda, Kenji; and Nishimura, Toshifumi, 4,207,738, Cl. 60-278.000.
Nishimura, Toshio: *See*—
Watanabe, Minoru; Nishimura, Toshio; Omi, Tadao; Koomoto, Kotaro; Kobuya, Tomohiko; and Shimizu, Kenichi, 4,208,611, Cl. 313-487.000.
Nishinomiya, Guen: *See*—
Suzuki, Fumiyoshi; Sasaki, Fumiyoshi; and Nishinomiya, Guen, 4,208,735, Cl. 367-136.000.
Niskala, Lauri O. Suction device for cleaning bottoms of waterways and for lifting sunken timber. 4,207,690, Cl. 37-58.000.
Nissan Chemical Industries, Limited: *See*—
Endo, Makoto; and Kusahara, Kohji, 4,208,391, Cl. 423-385.000.
Nissan Motor Company, Limited: *See*—
Fujiki, Norio; Baba, Kousaku; and Mimura, Akitoshi, 4,208,658, Cl. 343-7.0VM.
Sugasawa, Fukashi; Fukasawa, Noburu; Iizuka, Haruhiko; and Mumura, Akitoshi, 4,207,856, Cl. 123-198.00F.
Ushijima, Takashi; Iwasa, Yoshio; and Horiuchi, Tomofusa, 4,208,361, Cl. 261-121.00B.
Yoneda, Kenji; and Nishimura, Toshifumi, 4,207,738, Cl. 60-278.000.
Nittetu Chemical Engineering Ltd. (NICE): *See*—
Hirabayashi, Teruhiko; and Wassen, Willem J., 4,208,390, Cl. 423-356.000.
Nitto Chemical Industry Co., Ltd.: *See*—
Sasaki, Yutaka; Ikeda, Yoneichi; Tashiro, Masaharu; and Nakamura, Toshio, 4,208,303, Cl. 252-417.000.
Nitto Electric Industrial Co., Ltd.: *See*—
Ishizuka, Takashi; and Miwa, Naoki, 4,208,464, Cl. 428-377.000.
Nixdorf Computer AG: *See*—
Volke, Hans-Werner; and Hilkenmeier, Juergen, 4,208,138, Cl. 400-124.000.
NL Industries, Inc.: *See*—
Finlayson, Claude M., 4,208,218, Cl. 106-287.250.
Noborio, Ken-Ichi; and Maeda, Masao, to Kanebo Foods, Ltd. Powdery anti-stick agent for keeping the sticky surface of candy or chewing gum non-adhesive. 4,208,432, Cl. 426-4.000.
Noda, Masahiro; and Takahashi, Ryoji, to Mitsubishi Denki Kabushiki Kaisha. Proximity detector. 4,208,695, Cl. 361-181.000.
Noda, Mitsuhiko: *See*—
Yoshida, Masaaki; Watanabe, Masao; Tohma, Kimio; and Noda, Mitsuhiko, 4,208,252, Cl. 202-105.000.
Noel, Eugene M. Cup and cover turnover mechanism for English muffin griddles. 4,207,810, Cl. 99-373.000.
Noensie, Nick; Stanfield, John N.; and Pettersen, Paal, to A/S Akers Mek. Versted. Method and device for sealing the place of penetration of a pipeline in the wall of a submerged structure. 4,208,055, Cl. 277-1.000.
Noguchi, Tatsuhiko: *See*—
Yamaguchi, Hachiro; Noguchi, Tatsuhiko; and Endo, Kiichi, 4,208,216, Cl. 106-74.000.

Nolzen, Hans-Martin: *See*—
Gelsing, Winfried; and Nolzen, Hans-Martin, 4,208,179, Cl. 432-234.000.
Nonaka, Yasuhiko, to Hitachi, Ltd. Vacuum vapor-deposition apparatus. 4,207,836, Cl. 118-664.000.
Nored, Alvin. Embossed seal marking device. 4,208,143, Cl. 401-98.000.
Norman, John H., to General Atomic Company. Oxygen recovery from gas mixtures. 4,208,396, Cl. 423-579.000.
Norman, Richard O.: *See*—
Coleman, Bobby W.; Frassanito, John R.; Norman, Richard O.; and Parke, James G., 4,208,013, Cl. 239-351.000.
Norman, Robert W., Jr.: *See*—
Porter, Marion G.; Shelly, William A.; and Norman, Robert W., Jr., 4,208,716, Cl. 364-200.000.
Normann, Sabine: *See*—
Haberer, Klaus; Klen, Han-Ulrich; and Normann, Sabine, 4,208,281, Cl. 210-36.000.
Northwestern University: *See*—
Meiri, Samuel; Kot, Casey; Rogers, B. H. Gerald; and Epstein, Max, 4,207,872, Cl. 128-4.000.
Novanex Automation N.V.: *See*—
Laupman, Robert R., 4,208,546, Cl. 179-1.0GP.
Nowak, Rudolf; Dahmen, Kurt; and Barthell, Eduard, to Chemische Fabrik Stockhausen & Cie. Dried pulverulent products. 4,208,184, Cl. 8-94.230.
Nozawa, Hisao: *See*—
Hom-ma, Yoshio; Nozawa, Hisao; Sato, Akira; and Haada, Seiki, 4,208,257, Cl. 204-129.650.
Nuclear & Environmental Protection, Inc.: *See*—
Shindler, Harry A., 4,207,883, Cl. 128-201.220.
Numakura, Toshihiko, to Sony Corporation. Color recorder for reducing crosstalk. 4,208,673, Cl. 358-8.000.
Nuttall, Colin P.: *See*—
McLoughlin, Robert W.; and Nuttall, Colin P., 4,208,578, Cl. 250-214.0AG.
Nyman, Anders B. J.: *See*—
Eklund, Mats F.; Kjoller, Hans O. S.; and Nyman, Anders B. J., 4,208,714, Cl. 364-200.000.
Obu, Yuichiro: *See*—
Ishikawa, Masakazu; Oka, Hiroyuki; Shibatani, Juichi; and Obu, Yuichiro, 4,207,971, Cl. 188-218.00A.
O'Callaghan, Desmond: *See*—
Bryden, Joseph E.; Larsen, Ole J.; and O'Callaghan, Desmond, 4,208,657, Cl. 343-5.0DP.
Occidental Research Corporation: *See*—
Moudgil, Brij M., 4,208,272, Cl. 209-3.300.
Moudgil, Brij M.; and Messenger, David F., 4,208,273, Cl. 209-3.300.
Ochoa, Dominique, to KFC San Juan, Inc. Apparatus for separating solids of relatively low specific gravity from heavier liquids. 4,208,291, Cl. 210-522.000.
Oesterreichische Studiengesellschaft fur Atomenergie G.m.b.H.: *See*—
Knotik, Karl; and Leichter, Peter, 4,208,243, Cl. 159-6.00W.
Offlee, James E., Sr. Refrigerator systems utilizing assemblies to enable dispensing cold water or ice made from purified water. 4,207,994, Cl. 222-146.00R.
Ogita, Minoru, to Nippon Gakki Seizo Kabushiki Kaisha. Antenna input circuit for AM/FM radio receiver. 4,208,663, Cl. 343-853.000.
Oh, Chan S., to Beckman Instruments, Inc. Fluorescent displays. 4,208,106, Cl. 350-345.000.
Oharek, Frank J., to United States of America, Navy. Drugless eye examination system. 4,208,107, Cl. 351-7.000.
O'Hiser, Rodney L.: *See*—
Blomquist, Cecil R.; and O'Hiser, Rodney L., 4,208,590, Cl. 290-1.00R.
Ohki, Yoshinori; and Komiya, Hirokichi, to Iida Denki Kogyo Co., Ltd. Non-contact ignition system for an internal combustion engine. 4,207,852, Cl. 123-148.00E.
Ohkura, Zenichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Enlargement lens mount. 4,208,102, Cl. 350-252.000.
Ohlsson, Sven-Olof: *See*—
Eghammer, Lars E.; and Ohlsson, Sven-Olof, 4,208,566, Cl. 219-86.100.
Ohlsson, Weimar. Quick-coupling assembly for fluid conduits. 4,208,034, Cl. 251-149.100.
Ohmura, Kaoru; Shibasaki, Ichiro; and Kimura, Takeo, to Asahi Kasei Kogyo Kabushiki Kaisha. Heat resistant photoresist composition and process for preparing the same. 4,208,477, Cl. 430-281.000.
Ohnishi, Kizo: *See*—
Maruhashi, Motokazu; Ebina, Yoshio; and Ohnishi, Kizo, 4,208,499, Cl. 526-202.000.
Ohshima, Kazushi: *See*—
Kawamata, Motoo; Ohshima, Kazushi; Kudoh, Akihide; and Kotani, Makoto, 4,208,537, Cl. 568-804.000.
Oikawa, Mitsuhiro; and Matsuura, Susumu, to Tokyo Shibaura Electric Co., Ltd. Method of preparing zinc sulfide phosphor coactivated with copper and gold. 4,208,299, Cl. 252-301.60S.
Oiles Industry Co., Ltd.: *See*—
Cho, Hideo; Takenoshita, Yukinori; and Sugimoto, Saisuke, 4,208,472, Cl. 428-550.000.
Takata, Yataro; Takenoshita, Yukinori; Sasahara, Kiyoshi; Shigaki, Akira; Hirai, Kazuo; Maeda, Kosei; Tadokuro, Hideo; and Maeda, Hirokazu, 4,207,807, Cl. 92-128.000.
Oka, Hiroyuki: *See*—
Ishikawa, Masakazu; Oka, Hiroyuki; Shibatani, Juichi; and Obu, Yuichiro, 4,207,971, Cl. 188-218.00A.
Okabe, Michimasa: *See*—
Nakazato, Norio; Saho, Norihide; Yoshimatsu, Sachihiro; and Okabe, Michimasa, 4,208,199, Cl. 62-29.000.
Okada, Fumio; Kishita, Hirofumi; and Sato, Naomi, to Shin-Etsu Chemical Co. Ltd. Curable organopolysiloxane compositions. 4,208,312, Cl. 260-29.20M.
Okada, Takashi: *See*—
Kuniyoshi, Yasunobu; Okada, Takashi; and Sumi, Takao, 4,208,674, Cl. 358-8.000.
Okamoto, Toyoo: *See*—
Iwamoto, Minoru; Okamoto, Toyoo; and Mita, Shigeru, 4,208,122, Cl. 355-14.00R.
O'Keefe, Daniel A.: *See*—
Gomes, John M.; O'Keefe, Daniel A.; and McAlexander, Richard M., 4,208,275, Cl. 209-167.000.
Okumura, Akio, to Nikko Seiki Company Limited. Can opener. 4,207,676, Cl. 30-419.000.
Okuni, Tetsuo: *See*—
Wada, Takeshi; Kita, Hisanao; Okuni, Tetsuo; and Namatame, Yoshio, deceased, 4,208,564, Cl. 219-73.100.
Olin Corporation: *See*—
Sangster, Arlon G.; Casberg, John M.; and Tepas, Joseph J., 4,208,376, Cl. 422-261.000.
Olinkraft, Inc.: *See*—
Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 4,208,007, Cl. 229-31.00R.
Oloff, Clarence M.; Buehring, Willi J.; and Greenlees, Kevin J., to United States of America, Air Force. Injection system for suspension and solutions. 4,207,889, Cl. 128-213.00R.
Olsen, Gerald P. Exerciser and tension relieving device. 4,208,047, Cl. 272-67.000.
Olshvang, Mikhail V.; Tsfasman, Grigory M.; and Sheremet, Alexei A., to Vsesojuzny Elektrotekhnichesky Institut Imeni V. I. Lenina. Method and apparatus for control of static valve converter. 4,208,707, Cl. 363-35.000.
Olympic Fishing Tackles Co., Ltd.: *See*—
Ikeda, Katsuzo; and Kitagawa, Ikuo, 4,208,555, Cl. 200-52.00R.
Olympus Optical Co., Ltd.: *See*—
Sato, Masanobu; Satoh, Ken; Nakao, Toshihiro; and Furuta, Kenzi, 4,208,686, Cl. 360-137.000.
Sogi, Shinroku; Yoshinaga, Makoto; Shinohara, Toshio; Aihara, Takayuki; and Tawara, Ikuo, 4,208,484, Cl. 435-286.000.
Tojyo, Tsutomu, 4,208,099, Cl. 350-175.0ML.
Yanagida, Tuneo, 4,208,622, Cl. 318-257.000.
Omi, Tadao: *See*—
Watanabe, Minoru; Nishimura, Toshio; Omi, Tadao; Koomoto, Kotaro; Kobuya, Tomohiko; and Shimizu, Kenichi, 4,208,611, Cl. 313-487.000.
O'Neill, Edward G., to Medtronic, Inc. Device for screwing body tissue electrode into body tissue. 4,207,903, Cl. 128-785.000.
Ono Pharmaceutical Co. Ltd.: *See*—
Kurono, Masayasu; Hamanaka, Nobuyuki; Sakuyama, Shigeru; Chiba, Takeshi; and Nakai, Hisao, 4,208,428, Cl. 424-305.000.
Ono, Seibei; and Shibuya, Koichi, to Dainippon Ink and Chemicals, Inc. Method for coloring thermoplastic resins. 4,208,318, Cl. 260-40.00P.
Onuma, Kiyoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Double cardan universal joint. 4,207,757, Cl. 64-17.00R.
Oosaki, Keizo: *See*—
Fujita, Masanao; Sugawara, Toshiaki; and Oosaki, Keizo, 4,208,015, Cl. 241-16.000.
Oosthoek, Raoul H. J.: *See*—
Visser, Johannes; Oosthoek, Raoul H. J.; Groeneweg, Jan W.; and Dijkstra, Hendrik, 4,208,436, Cl. 426-104.000.
Opel, Detlef; and Moller, Rudolf, to WABCO Westinghouse GmbH. Hand-operation device for solenoid valves. 4,207,917, Cl. 137-269.000.
Optical Radiation Corporation: *See*—
Wilkinson, John N., 4,208,018, Cl. 242-55.19R.
Orban Associates, Inc.: *See*—
Orban, Robert A., 4,208,548, Cl. 179-1.0VL.
Orban, Robert A., to Orban Associates, Inc. Apparatus and method for peak-limiting audio frequency signals. 4,208,548, Cl. 179-1.0VL.
Orieux, Francois, to CSF-Compagnie Generale de Telegraphie sans Fil. Sound source detecting systems. 4,208,733, Cl. 367-125.000.
Orion Industries, Inc.: *See*—
Horn, Dale W.; and Wickline, William A., 4,208,662, Cl. 343-792.000.
Orlov, Valentin K.: *See*—
Belyakov, Viktor P.; Gustov, Vilgelm F.; Step, Khaim Y.; Garin, Vadim A.; Orlov, Valentin K.; Kortikov, Viktor S.; Prokofieva, Nina A.; Terushkina, Anna E.; and Vinogradova, Ljudmila B., 4,208,360, Cl. 261-114.00R.
Ormsby, Ralph D.: *See*—
Killpatrick, Joseph E.; and Ormsby, Ralph D., 4,208,024, Cl. 244-3.150.
Oronzio deNora Impianti Elettrochimici S.p.A.: *See*—
Giuffre, Luigi; Spaziante, Placido M.; Pozzi, Vittorio; and Modica, Giovanni, 4,208,455, Cl. 427-341.000.
Oros Company: *See*—
Gardner, James H.; and de Nevers, Noel H., 4,207,943, Cl. 165-1.000.
O'Rourke, Harold T.: *See*—
Comerford, Matthias F.; Munroe, Thomas N.; and O'Rourke, Harold T., 4,208,002, Cl. 228-37.000.
Orr, Allie E. Device holder. 4,208,703, Cl. 362-287.000.

Orr, Monte A.: *See*—
Meister, Robert L.; and Orr, Monte A., 4,207,829, Cl. 114-245.000.
Osborne, Robert D. Chalkboard erasers. 4,207,646, Cl. 15-224.000.
Oschatz GmbH: *See*—
Gelsing, Winfried; and Nolzen, Hans-Martin, 4,208,179, Cl. 432-234.000.
Ostrowski, Jerzy; Sierputowski, Piotr; Turkowski, Lukasz; Jablkiewicz, Jerzy; Pacholski, Jan; and Jedryka, Tadeusz, to Centralny Osrodek Badawczo-Rozwojowy Maszyn Wlokienniczych. Equipment for pneumatic manufacture of yarn. 4,207,728, Cl. 57-58.890.
Otsuka, Yasuhiro: *See*—
Hori, Ryuzo; Uchida, Kiyoshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; and Wakisaka, Hiroshi, 4,208,265, Cl. 204-195.00S.
Oughton, Richard W., to Du Pont of Canada, Limited. Treatment of comminuted oats under the influence of an electric field. 4,208,259, Cl. 204-180.00R.
Oughton, Richard W., to Du Pont of Canada, Limited. Treatment of comminuted proteinaceous material under the influence of an electric field. 4,208,260, Cl. 204-180.00R.
Outokumpu Oy: *See*—
Hamalainen, Matti J.; Rastas, Jussi K.; Tiitinen, Heikki A.; and Niemi, Tom O., 4,208,380, Cl. 423-143.000.
Owens-Corning Fiberglas Corporation: *See*—
Jones, Bernard H.; Cox, Daniel; and Gallagher, Don R., 4,208,016, Cl. 242-18.00G.
Rueck, Jon M., 4,208,201, Cl. 65-27.000.
Owens-Illinois, Inc.: *See*—
Heyne, Clarence A., 4,208,237, Cl. 156-446.000.
McColl, Bruce J., 4,207,956, Cl. 180-24.000.
Oyo Corporation: *See*—
Kitsunezaki, Choro, 4,207,961, Cl. 181-106.000.
Ozawa, Keiji; and Kinjo, Hisao, to Victor Company of Japan, Ltd. Color video recorder/reproducer. 4,208,671, Cl. 358-4.000.
Paccar Inc.: *See*—
Maassen, Jules B., 4,208,062, Cl. 280-434.000.
Pachernegg, Siegfried: *See*—
List, Hans; Pachernegg, Siegfried; and Schukoff, Bruno, 4,207,843, Cl. 123-30.00D.
Pacholski, Jan: *See*—
Ostrowski, Jerzy; Sierputowski, Piotr; Turkowski, Lukasz; Jablkiewicz, Jerzy; Pacholski, Jan; and Jedryka, Tadeusz, 4,207,728, Cl. 57-58.890.
Pagani, Giorgio, to Montedison S.p.A. Process for the synthesis of urea. 4,208,347, Cl. 260-555.00A.
Page, Benjamin L. Tool for removing a cylinder lock. 4,207,663, Cl. 29-263.000.
Pagel, Ernst-Olav: *See*—
Borst, Wolfgang; Klotzner, Winfried; Pagel, Ernst-Olav; and Vetter, Hermann, 4,207,846, Cl. 123-117.00D.
Pagels, Louis T.: *See*—
Weiler, Gerhard H.; and Pagels, Louis T., 4,207,990, Cl. 220-267.000.
Paget, Charles J.; and Sands, John L., to Eli Lilly and Company. N-Heterocyclic ureas as immune regulants. 4,208,419, Cl. 424-270.000.
Pahlman, John E.; and Khalafalla, Sanaa E., to United States of America, Interior. Recovery of metals from Atlantic sea nodules. 4,208,379, Cl. 423-49.000.
Palazzo, Vito: *See*—
Carlos, Mark F.; Jon, Min-Chung; and Palazzo, Vito, 4,207,771, Cl. 73-587.000.
Palitex Project Company GmbH: *See*—
Lorenz, Rainer, 4,207,730, Cl. 57-351.000.
Panaccione, Elmer S., to Westinghouse Electric Corp. Method for improving the performance of low pressure fluorescent discharge lamp which utilizes zinc silicate as a phosphor blend constituent. 4,208,448, Cl. 427-67.000.
Pankratiev, Oleg N.: *See*—
Babanin, Boris I.; Glyanchenko, Vladimir D.; Grechanichenko, Grigory M.; Erkin, Leonid I.; Litvin, Evgeny M.; Matskevich, Daniil D.; Nefedov, Petr Y.; Pankratiev, Oleg N.; Dobrovolsky, Evgeny V.; Petrukhno, Anatoly S.; and Frumkin, Vladlen M., 4,208,250, Cl. 201-10.000.
Papst, Hermann. Connecting rod for axial cylinder-type reciprocating piston engine. 4,207,779, Cl. 74-579.00R.
Paragon Candles, Inc.: *See*—
Patterson, Michael P.; and Perkins, William H., 4,207,978, Cl. 206-443.000.
Paranjpe, Suresh C., to Mead Corporation, The. Multiple copy ink jet printer. 4,208,666, Cl. 346-75.000.
Parke, James G.: *See*—
Coleman, Bobby W.; Frassanito, John R.; Norman, Richard O.; and Parke, James G., 4,208,013, Cl. 239-351.000.
Paruso, Deborah M.; and Yoldas, Bulent E., to Westinghouse Electric Corp. Method of forming sodium beta-Al_2O_3 solid materials. 4,208,475, Cl. 429-193.000.
Passarella, Thomas M. Telephone line bank auxiliary line switching circuit. 4,208,551, Cl. 179-98.000.
Pasterchick, Harry, Jr.: *See*—
Kekas, Dennis H.; Lynch, Robert C.; Mathewson, James A.; McAdams, Ronald P.; and Pasterchick, Harry, Jr., 4,208,081, Cl. 339-31.00R.
Pastien, Eugene R.: *See*—
Kelly, Michael G.; and Pastien, Eugene R., 4,208,457, Cl. 428-107.000.
Patel, Amrut R.; and Hansen, Donald M., to Siemens-Allis, Inc. Force convection heat pump and temperature measuring system for a gas insulated two pressure breaker. 4,208,556, Cl. 200-148.00E.
Patel, Bhupendra C., to Kendall Company, The. Catheter. 4,207,899, Cl. 128-349.00B.
Patel, Bhupendra C.; Schweizer, Russell J.; and Smith, Jesse C., to Kendall Company, The. Insert molded catheter and method. 4,207,900, Cl. 128-349.00B.
Patel, Gordhanbhai N., to Allied Chemical Corporation. Process for monitoring time-temperature histories of perishables utilizing inactive form of diacetylene. 4,208,186, Cl. 23-230.00R.
Patel, Shashi P.: *See*—
Bergfeld, Robert A.; Patel, Shashi P.; and Schlickenrieder, Lynn M., 4,208,496, Cl. 525-3.000.
Patterson, Michael P.; and Perkins, William H., to Paragon Candles, Inc. Display package for tapered candles. 4,207,978, Cl. 206-443.000.
Patton, Tad L., to Exxon Research & Engineering Co. Stabilizztion of organic amide solvents and polymer solutions thereof. 4,208,486, Cl. 521-89.000.
Paul, Maynard C.; and Lo, David S., to Sperry Corporation. Magnetoresistive detector for cross-tie wall memory system. 4,208,725, Cl. 365-87.000.
Pavlecka, Vladimir H., to Airships International, Inc. Gradation of skin thickness on metal-clad airship hulls. 4,208,027, Cl. 244-126.000.
Peck, Robert A.: *See*—
Tucker, James W.; and Peck, Robert A., 4,208,170, Cl. 416-221.000.
Peek, Johannes B. H.; and Schmidt, Johan M., to U.S. Philips Corporation. Circuit for suppressing noise caused by scratches on a phonograph record. 4,208,634, Cl. 330-149.000.
Peek, Steven L.: *See*—
Wilcox, Allan K.; Wilcox, Mark I.; and Peek, Steven L., 4,207,951, Cl. 172-225.000.
Pelsue, Bradley A.; and Beavers, Allan E., to T. A. Pelsue Company. Air distribution sheath. 4,207,685, Cl. 34-107.000.
Pendleton, Robert G.: *See*—
Bondinell, William E.; and Pendleton, Robert G., 4,208,430, Cl. 424-326.000.
Pennwalt Corporation: *See*—
Callahan, John W., 4,207,666, Cl. 29-402.080.
Sandler, Stanley R., 4,208,321, Cl. 260-45.75K.
Sandler, Stanley R., 4,208,322, Cl. 260-45.75K.
Pentel Kabushiki Kaisha: *See*—
Azuma, Daisaburo, 4,208,145, Cl. 401-196.000.
Penyaskin, Timofei I.: *See*—
Svetlov, Sergei A.; Mokin, Valentin S.; Shneiderman, Mark S.; Selnitsyn, Mikhail G.; Lupin, Vladimir A.; Penyaskin, Timofei I.; Stepanov, Gennady P.; Reger, Ivan Y.; and Timkin, Nikolai I., 4,208,040, Cl. 266-121.000.
Penza, Carmine, Jr. Mechanical writing instrument. 4,207,695, Cl. 40-334.000.
Perkins, William H.: *See*—
Patterson, Michael P.; and Perkins, William H., 4,207,978, Cl. 206-443.000.
Perreault, Henry W., to Raytheon Company. Cavity feed system. 4,208,562, Cl. 219-10.55R.
Perrine, James J.; and Scates, Allen E. Jump measuring apparatus. 4,208,050, Cl. 273-1.50A.
Perry, Lawrence M. Three-dimensional projection system. 4,208,086, Cl. 350-3.850.
PerSci, Inc.: *See*—
Bryer, Philip S., 4,208,682, Cl. 360-99.000.
Pershin, Gennady D.; Zalyaljutdinov, Klim G.; Gimazetdinov, Rais F.; Egorov, Vladimir D.; and Schegolev, Gennady K. Process for manufacturing twisted wire articles with variable direction of twist and a machine for accomplishing same. 4,207,928, Cl. 140-115.000.
Person, Abraham: *See*—
Wetmore, Sherman B.; and Person, Abraham, 4,208,290, Cl. 210-460.000.
Pertle, John E.: *See*—
Astle, William H.; and Pertle, John E., 4,207,786, Cl. 82-4.00C.
Pesiri, James B., to J. C. Sales & Mfg. Co., Inc. Reclinable seating structure. 4,208,071, Cl. 297-369.000.
Peters, Clifford M., to W-K-M Wellhead Systems, Inc. Control valve for fluid actuator. 4,207,924, Cl. 137-625.660.
Peters, Edward N.: *See*—
Hedaya, Eddie; Kwiatkowski, George T.; Peters, Edward N.; and Stewart, Donald D., 4,208,492, Cl. 525-389.000.
Peterson, David G.: *See*—
Heinen, Harold J.; Peterson, David G.; and Lindstrom, Roald E., 4,208,378, Cl. 423-27.000.
Peterson, Roger A. Solar energy system. 4,207,868, Cl. 126-449.000.
Peterson, Soren E. Bracket supported side view mirror system. 4,208,104, Cl. 350-304.000.
Petocz, Lujza: *See*—
Rozsa, Laszlo; Petocz, Lujza; Grasser, Katalin; Kosoczky, Ibolya; Kiszelly, Eniko; and Nagy, Jozsef, 4,208,410, Cl. 424-244.000.
Petrukhno, Anatoly S.: *See*—
Babanin, Boris I.; Glyanchenko, Vladimir D.; Grechanichenko, Grigory M.; Erkin, Leonid I.; Litvin, Evgeny M.; Matskevich, Daniil D.; Nefedov, Petr Y.; Pankratiev, Oleg N.; Dobrovolsky, Evgeny V.; Petrukhno, Anatoly S.; and Frumkin, Vladlen M., 4,208,250, Cl. 201-10.000.
Pettersen, Paal: *See*—
Noensie, Nick; Stanfield, John N.; and Pettersen, Paal, 4,208,055, Cl. 277-1.000.

Pfister, Jurg R., to Syntex Inc. Anticholinergic bronchodilators. 4,208,423, Cl. 424-274.000.

Pharmindustrie: *See—*
Uzan, Andre V., 4,208,417, Cl. 424-267.000.

Phillips, D. Colin, to Westinghouse Electric Corp. Protective system for electrical apparatus. 4,208,655, Cl. 340-627.000.

Phillips, Edward G., to Lucas Industries Limited. Starting systems for internal combustion engine. 4,207,853, Cl. 123-179.00B.

Phillips, Leyland R.: *See—*
Lofthouse, Charles H.; Bell, David G.; and Phillips, Leyland R., 4,208,277, Cl. 209-223.00A.

Phillips Petroleum Company: *See—*
Fahey, Darryl R., 4,208,304, Cl. 252-429.00C.
Gardner, Lloyd E., 4,208,352, Cl. 568-431.000.
McKay, Dwight L., 4,208,302, Cl. 252-411.00R.
Mitchell, Norris W., 4,208,384, Cl. 423-220.000.
Small, William M., 4,208,198, Cl. 62-21.000.
Smith, Ernest L., 4,207,725, Cl. 53-471.000.

Phillips, Wayne A. Fuel conservation system for internal combustion engines. 4,207,855, Cl. 123-198.00F.

Philpott, Conrad L.; and Blase, Emil F., to Sangamo Weston, Inc. Capacitor with molded header including strengthening material. 4,208,699, Cl. 361-433.000.

Picker, William A.: *See—*
Janssen, Donovan M.; Kellow, Raymond E., Sr.; Picker, William A.; and Radman, Anton J., Jr., 4,208,684, Cl. 360-104.000.

Pikus, Francis W.: *See—*
Graves, James A.; and Pikus, Francis W., 4,208,603, Cl. 313-1.000.

Pillsbury Company, The: *See—*
Westover, Jack D., 4,208,441, Cl. 426-293.000.

Pinson, Denis: *See—*
Abraham, Jean-Jacques; and Pinson, Denis, 4,208,708, Cl. 363-57.000.

Pirovano, Camillo. Feeding trough, for animal raising installation, particularly for fowl feeding. 4,207,838, Cl. 119-51.0CF.

Piso, John S., to Micro Sensors, Inc. Capacitive measuring system with automatic calibration. 4,208,625, Cl. 324-61.00R.

Plainer, Hermann: *See—*
Kraemer, Dieter; Plainer, Hermann; and Schleier, Waldemar, 4,208,309, Cl. 260-8.000.

Plummer, Dexter R.: *See—*
Dashwood, Nigel J. R.; and Plummer, Dexter R., 4,208,589, Cl. 250-560.000.

Plummer, William T., to Polaroid Corporation. Photographic camera accessory. 4,208,112, Cl. 354-42.000.

Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes: *See—*
Ragout, Bernard; and Devlacminck, Gerard, 4,208,067, Cl. 285-242.000.

Poage, Melvin L., to Scherr-Tumico, Inc. Micrometer. 4,207,679, Cl. 33-166.000.

Podola, Nikolai V.: *See—*
Kuchuk-Yatsenko, Sergei I.; Krivenko, Valery G.; Podola, Nikolai V.; Krivonos, Vadim P.; and Chev, Boris L. G., 4,208,569, Cl. 219-97.000.

Polak, Josef; and Mrazek, Josef, to Chemoprojekt. Sensor for determination of the polarization potential and/or the interference of metal structures buried in an electrolyte in a current field. 4,208,264, Cl. 204-195.00C.

Polaroid Corporation: *See—*
Plummer, William T., 4,208,112, Cl. 354-42.000.

Polillo, William M.; Bray, Martin L.; Reno, Richard W.; and La Mere, Albert J. Coin surveilance apparatus. 4,208,549, Cl. 179-6.30R.

Polzl, Hans-Werner: *See—*
Dommes, Werner; Hartl, Alfre; and Polzl, Hans-Werner, 4,207,742, Cl. 60-602.000.

Popov, Alexandr D.; and Solomin, Vladimir A. Linear induction motor. 4,208,596, Cl. 310-13.000.

Popov, Jury S.; Gorbunov, Gennady S.; Skachkov, Jury V.; and Badrukhin, Jury I. Electrical machine with cryogenic cooling. 4,208,598, Cl. 310-64.000.

Poppe, Richard L.: *See—*
Childress, David L.; Hayes, William V.; and Poppe, Richard L., 4,208,306, Cl. 252-456.000.

Population Research Incorporated: *See—*
Bolduc, Lee R., 4,207,891, Cl. 128-235.000.

Porter, Marion G.; Shelly, William A.; and Norman, Robert W., Jr., to Honeywell Information Systems Inc. Cache arrangement for performing simultaneous read/write operations. 4,208,716, Cl. 364-200.000.

Porter, Roy A.: *See—*
Harshbarger, William R.; Levinstein, Hyman J.; Mogab, Cyril J.; and Porter, Roy A., 4,208,241, Cl. 156-643.000.

Porter, Samuel, Jr.: *See—*
Chang, Wen-Hsuan; Erikson, J. Alden; and Porter, Samuel, Jr., 4,208,494, Cl. 525-440.000.
Chang, Wen-Hsuan; Erikson, J. Alden; and Porter, Samuel, Jr., 4,208,495, Cl. 525-440.000.

Posternak, Theodore: *See—*
Lapinet, Eugene; Cehovic, Georges; and Posternak, Theodore, 4,208,406, Cl. 424-180.000.

Postupack, Dennis S.; Allerton, David A.; and Emmert, Richard L., to PPG Industries, Inc. Method for forming graded shade band on substrate. 4,208,446, Cl. 430-124.000.

Pouillange, Jean-Paul, to BBC Brown, Boveri & Cie. Device for helium transfer between rotating and non-rotating members. 4,207,745, Cl. 62-55.000.

Poujol, Pierre: *See—*
Etcheverria, Jean-Michel; Lazarre, Flavien; and Poujol, Pierre, 4,208,195, Cl. 55-159.000.

Poulain, Claude: *See—*
Deleens, Gerard; Jacques, Ferlampin; and Poulain, Claude, 4,208,493, Cl. 525-420.000.

Powell Industries, Inc.: *See—*
Hutton, Roger S., 4,207,919, Cl. 137-487.500.

Poytress, Roderick J. Harvesting device. 4,207,727, Cl. 56-330.000.

Pozzi, Vittorio: *See—*
Giuffre, Luigi; Spaziante, Placido M.; Pozzi, Vittorio; and Modica, Giovanni, 4,208,455, Cl. 427-341.000.

PPG Industries, Inc.: *See—*
Chang, Wen-Hsuan; Erikson, J. Alden; and Porter, Samuel, Jr., 4,208,494, Cl. 525-440.000.
Chang, Wen-Hsuan; Erikson, J. Alden; and Porter, Samuel, Jr., 4,208,495, Cl. 525-440.000.
Drummond, Warren W., 4,208,000, Cl. 226-171.000.
Postupack, Dennis S.; Allerton, David A.; and Emmert, Richard L., 4,208,446, Cl. 430-124.000.

Prado, Philip G.; Stuckey, Raymond L.; and Volles, Fredrick O., to International Business Machines Corporation. High density integrated circuit package. 4,208,079, Cl. 312-202.000.

Preh, Electrofeinmechanische Werke, Jakob Preh Nachf GmbH & Co.: *See—*
Vogt, Alfred; Veith, Bernd; and Ruttiger, Anton, 4,208,654, Cl. 340-351.000.

Preiss, Michael; and Metzger, Karl G., to Bayer Aktiengesellschaft. β-Lactam antibiotics. 4,208,412, Cl. 424-250.000.

Pretorius, Victor; and Hahn, Hans H. Apparatus for distribution separation processes. 4,208,284, Cl. 210-65.000.

Previte, Peter L., to Singer Company, The. Method of manufacturing a flexure suspension assembly. 4,207,668, Cl. 29-434.000.

Priest, David C.; and Langdale-Smith, Richard A., to Union Carbide Corporation. Polymer/polyols and process for production thereof. 4,208,314, Cl. 260-33.20R.

Pringle, Patrick W.: *See—*
Bakewicz, Frank J.; Bouchard, Patrick M.; and Pringle, Patrick W., 4,208,568, Cl. 219-86.310.

Pritschau, Raymond H.: *See—*
Lavallee, Francois A.; and Pritschau, Raymond H., 4,208,328, Cl. 548-180.000.

Prochnow, Claus, to Rollei-Werke Franke & Heidicke. Photographic camera. 4,208,113, Cl. 354-82.000.

Prodanov, Velcho A.: *See—*
Jordanov, Jordan T.; Abrashev, Georgi I.; Jekov, Velyu D.; Georgiev, Georgi T.; Haralampiev, Georgi A.; Janev, Janco H.; and Prodanov, Velcho A., 4,208,041, Cl. 266-196.000.

Prokofieva, Nina A.: *See—*
Belyakov, Viktor P.; Gustov, Vilgelm F.; Step, Khaim Y.; Garin, Vadim A.; Orlov, Valentin K.; Kortikov, Viktor S.; Prokofieva, Nina A.; Terushkina, Anna E.; and Vinogradova, Ljudmila B., 4,208,360, Cl. 261-114.00R.

Propper, Ronald: *See—*
Fitton, Peter; and Propper, Ronald, 4,208,334, Cl. 260-345.500.

Proske, Joachim, to Rollei-Werke Franke & Heidecke. Viewfinder system with focusing screen. 4,208,115, Cl. 354-201.000.

Protectaire Systems Co.: *See—*
Napadow, Stanley C., 4,207,833, Cl. 118-324.000.

Protein Foods (U.K.) Limited: *See—*
Whittle, Kenneth F., 4,208,134, Cl. 366-147.000.

Prouty, Myron R.; Nichols, Colin J.; Brown, Norman A.; and Sutter, Stephen P., to Cutter Laboratories, Inc. Closures for containers. 4,207,988, Cl. 215-232.000.

Przytulla, Dietmar, to Mauser Kommandit-Gesellschaft. Head for extruding thermoplastic tubes. 4,208,178, Cl. 425-467.000.

Pumpex Production AB: *See—*
Jonsson, Arne F., 4,208,171, Cl. 417-15.000.

Quaker Oats Company, The: *See—*
Tsao, Ter-Fung, 4,208,476, Cl. 426-549.000.

Queen's University at Kingston: *See—*
Romera-Sierra, Cesar; and Webb, John C., 4,207,689, Cl. 35-20.000.
Wolfe, Saul, 4,208,325, Cl. 260-239.00A.

Quigley, William A.; and Sorenson, Paul H., to UOP Inc. Sonic spray of H_2SD_4 in a swirling heated air stream. 4,208,192, Cl. 55-5.000.

R. L. Kuss and Company: *See—*
Combest, John F., 4,207,724, Cl. 53-403.000.

Rab Tec Products Corporation: *See—*
Lampert, Barry, 4,207,677, Cl. 433-60.000.

Rabatin, Jacob G., to General Electric Company. X-ray intensifying screen. 4,208,470, Cl. 428-328.000.

Radiochemical Centre Limited, The: *See—*
Edwards, John C., 4,208,400, Cl. 424-1.000.

Radman, Anton J., Jr.: *See—*
Janssen, Donovan M.; Kellow, Raymond E., Sr.; Picker, William A.; and Radman, Anton J., Jr., 4,208,684, Cl. 360-104.000.

Ragout, Bernard; and Devlacminck, Gerard, to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes. Flexible hoses. 4,208,067, Cl. 285-242.000.

Rainey, Don E. Power source using cyclically variable liquid level. 4,207,741, Cl. 60-496.000.

Ralphs, Robert E.: *See—*
Bixler, Kenneth D.; Ralphs, Robert E.; Lord, Henry A.; and Reifers, Richard F., 4,208,006, Cl. 229-2.50R.
Ramanathan, Visvanathan, to Ciba-Geigy Corporation. Disperse diaminopyridine-3-azo dyestuffs. 4,208,324, Cl. 260-156.000.
Ramey, Chester E.; and Luzzi, John J., to Ciba-Geigy Corporation. Substituted piperazine diones. 4,208,522, Cl. 544-385.000.
Randall, Cyril A.: *See—*
Becker, Bernard B.; Bowman, John K.; and Randall, Cyril A., 4,207,915, Cl. 137-117.000.
Rao, G. R. Mohan: *See—*
Redwine, Donald J.; and Rao, G. R. Mohan, 4,208,727, Cl. 365-105.000.
Rao, Vemulapalli D. N.; Jaimee, Angelo; and Howes, Benjamin T., to Ford Motor Company. Method of making low cost insertable type port liner. 4,207,660, Cl. 29-156.4WL.
Rasala, Edward J.; and Young, Charles J., to Data General Corporation. Floating point data processing system. 4,208,722, Cl. 364-760.000.
Rasberger, Michael; and Baumeister, Peter, to Ciba-Geigy Corporation. Reduction of 4-oxo-tetraalkylpiperidines. 4,208,525, Cl. 546-184.000.
Rashkin, Jay A., to Halcon Research and Development Corporation. Hydrogenation of acetophenone using barium-copper chromite-zinc. 4,208,539, Cl. 568-814.000.
Rasmussen, Ross H. Process and apparatus for producing nonaqueous coke slurry and pipeline transport thereof. 4,208,251, Cl. 201-14.000.
Rass, Inc.: *See—*
Helt, Raymond E.; and Davis, Stanley M., 4,207,776, Cl. 74-235.000.
Rastas, Jussi K.: *See—*
Hamalainen, Matti J.; Rastas, Jussi K.; Tiitinen, Heikki A.; and Niemi, Tom O., 4,208,380, Cl. 423-143.000.
Rattlingourd, Glen D., to Sperry Corporation. System and method for clocking data between a remote unit and a local unit. 4,208,724, Cl. 364-900.000.
Raudat, John L.; and Rydell, Adam Z., to Standard-Knapp, Inc. Finger assembly for case loader. 4,207,721, Cl. 53-248.000.
Raudat, John L., to Standard-Knapp, Inc. Finger assembly for case loader. 4,207,722, Cl. 53-248.000.
Raytheon Company: *See—*
Bryden, Joseph E.; Larsen, Ole J.; and O'Callaghan, Desmond, 4,208,657, Cl. 343-5.0DP.
Craig, James R.; and Nerge, Steven F., 4,208,586, Cl. 250-447.000.
McOwen, Sherwood A., Jr., 4,208,660, Cl. 343-769.000.
Perreault, Henry W., 4,208,562, Cl. 219-10.55R.
Saunders, Ronald J., 4,208,642, Cl. 333-246.000.
Sheldon, Edward J.; Brown, William C., Jr.; Shovlin, Thomas D.; and Wagner, Ronald A., 4,208,632, Cl. 328-117.000.
RCA Corporation: *See—*
Dingwall, Andrew G. F.; and Stewart, Roger G., 4,208,730, Cl. 365-203.000.
Reade, Grahame M.: *See—*
Cunningham, John A.; and Reade, Grahame M., 4,208,468, Cl. 428-315.000.
Redwine, Donald J.; and Rao, G. R. Mohan, to Texas Instruments Incorporated. Semiconductor read only memory using MOS diodes. 4,208,727, Cl. 365-105.000.
Reed, James R.; Way, Terrance; and Leal, Richard A., to General Motors Corporation. Method for coating catalyst supports. 4,208,454, Cl. 427-238.000.
Reed, Jerry A.; Van Delden, Ronald; Waring, Winfred F.; and Maruko, Shuji U., to United States of America, Army. Cam firing mechanism. 4,207,795, Cl. 89-1.813.
Reed, Stuart E., to Babcock & Wilcox Company, The. Weldable instrumentation installation tool. 4,208,567, Cl. 219-86.100.
Reflectolite Products, Inc.: *See—*
Hauber, Peter F., 4,208,068, Cl. 292-126.000.
Refreshment Machinery Incorporated: *See—*
Neely, Raymond J., 4,207,995, Cl. 222-231.000.
Regef, Andre: *See—*
Chaboseau, Jean; and Regef, Andre, 4,207,754, Cl. 62-402.000.
Regele, Bruno, to AGFA-Gevaert, A.G. Apparatus for severing and stacking photographic prints or the like. 4,207,788, Cl. 83-89.000.
Reger, Ivan Y.: *See—*
Svetlov, Sergei A.; Mokin, Valentin S.; Shneiderman, Mark S.; Selnitsyn, Mikhail G.; Lupin, Vladimir A.; Penyaskin, Timofei I.; Stepanov, Gennady P.; Reger, Ivan Y.; and Timkin, Nikolai I., 4,208,040, Cl. 266-121.000.
Reibetanz, Wilbert; Sigg, Horst; Wiesner, Herbert; Wanner, Karl; Hansel, Gernot; Seitz, Karl; and Bleicher, Manfred, to Robert Bosch GmbH. Particulate material intercepting arrangement for a hand held tool. 4,207,953, Cl. 175-209.000.
Reid, Ansell L.: *See—*
Allain, Ronald J.; Braithwaite, David G.; and Reid, Ansell L., 4,208,392, Cl. 423-497.000.
Reid, James E. Simplified assembly of rail fence. 4,208,038, Cl. 256-65.000.
Reifers, Richard F.: *See—*
Bixler, Kenneth D.; Ralphs, Robert E.; Lord, Henry A.; and Reifers, Richard F., 4,208,006, Cl. 229-2.50R.
Reimers, George W.: *See—*
Khalafalla, Sanaa E.; Reimers, George W.; and Rholl, Stephen A., 4,208,294, Cl. 252-62.520.
Reinhart, Daniel J.: *See—*
Frantzreb, John G., Sr.; and Reinhart, Daniel J., 4,208,563, Cl. 219-73.000.
Reinshagen, Hellmuth: *See—*
Egger, Helmut; and Reinshagen, Hellmuth, 4,208,326, Cl. 260-239.0BF.
Reisert, Arthur: *See—*
Nauroth, Peter; Esch, Heinz; Kuhlmann, Robert; Bode, Rudolf; Reisert, Arthur; Buhler, Harald; and Turk, Gunter, 4,208,316, Cl. 260-37.0SB.
Reliable Electric Company: *See—*
Gilberts, Alexander G., 4,208,694, Cl. 361-119.000.
REMS-WERK Christian Foll und Sohne GmbH & Co.: *See—*
Wagner, Rudolf, 4,207,657, Cl. 29-33.00T.
Renaud, Pierre: *See—*
Andrieux, Claude; and Renaud, Pierre, 4,207,922, Cl. 137-625.110.
Renholmens Mekaniska Verkstad AB: *See—*
Holmqvist, Bo H., 4,208,163, Cl. 414-723.000.
Reno, Richard W.: *See—*
Polillo, William M.; Bray, Martin L.; Reno, Richard W.; and La Mere, Albert J., 4,208,549, Cl. 179-6.30R.
Research Corporation of the University of Hawaii, The: *See—*
White, Henry J., 4,208,220, Cl. 134-7.000.
Restaurant Technology, Inc.: *See—*
Brill, Frank D., 4,207,809, Cl. 99-279.000.
Rexnord Inc.: *See—*
MacMaster, Edward, 4,207,655, Cl. 24-221.00R.
Reynolds, Arthur T. Airplane lock for control surfaces. 4,208,026, Cl. 244-224.000.
Reynolds, Lionel A., to A. F. Hydraulics Limited. Hydraulic oscillatory devices. 4,207,801, Cl. 91-278.000.
Reyrolle Parsons Limited: *See—*
Ryder, Dennis M., 4,208,583, Cl. 250-302.000.
Rholl, Stephen A.: *See—*
Khalafalla, Sanaa E.; Reimers, George W.; and Rholl, Stephen A., 4,208,294, Cl. 252-62.520.
Rhone-Poulenc Industries: *See—*
Bargain, Michel; and Lefort, Marcel, 4,208,342, Cl. 556-436.000.
Cerny, Jacqueline; and Vivant, Gilbert, 4,208,317, Cl. 260-38.000.
Costantini, Michel; and Jouffret, Michel, 4,208,339, Cl. 260-396.00R.
Costantini, Michel; Dromard, Adrien; Jouffret, Michel; and Nantermet, Roland, 4,208,536, Cl. 568-771.000.
Richard Wolf GmbH: *See—*
Hiltebrandt, Siegfried; and Wurster, Helmut, 4,207,887, Cl. 128-207.280.
Richardson-Merrell Inc.: *See—*
Harrison, Boyd L., 4,208,516, Cl. 544-17.000.
Richter, Alice E. Headgear for support of broken jaws during healing. 4,207,881, Cl. 128-89.00A.
Ricketts, James B., Jr.: *See—*
Auman, John T.; Mennucci, Donald F.; and Ricketts, James B., Jr., 4,208,266, Cl. 204-195.00S.
Ricoh Company, Ltd.: *See—*
Abe, Takeshi, 4,208,653, Cl. 340-151.000.
Iwamoto, Minoru; Okamoto, Toyoo; and Mita, Shigeru, 4,208,122, Cl. 355-14.00R.
Iwanaga, Yoshiharu, 4,208,233, Cl. 156-345.000.
Kuzuwata, Masayuki; Machida, Hazime; Tamura, Hiroshi; and Saito, Tadashi, 4,208,212, Cl. 106-2.000.
Ricoh Watch Co., Ltd.: *See—*
Takahashi, Shigekazu; and Sawada, Shinji, 4,207,732, Cl. 368-76.000.
Riggs, Dennis M.: *See—*
Diefendorf, Russell J.; and Riggs, Dennis M., 4,208,267, Cl. 208-22.000.
Riker Laboratories, Inc.: *See—*
Hammar, Walton J.; and Rustad, Mark A., 4,208,337, Cl. 260-346.220.
Scherrer, Robert A.; Hammar, Walton J.; and Stern, Richard M., 4,208,335, Cl. 260-346.220.
Scherrer, Robert A., 4,208,336, Cl. 260-346.220.
Watson, Peter G., 4,208,349, Cl. 260-570.00R.
Ringland, William L., to Siemens-Allis, Inc. Plural electric motors driving common load and having interconnections for load control. 4,208,620, Cl. 318-111.000.
Rioux, Leonard: *See—*
Aubin, Jean-Marie; Graveline, Lionel; and Rioux, Leonard, 4,207,966, Cl. 182-181.000.
Ripa, Bjorn S., to Akermans Verkstad AB. Valve blocks, in particular for hydraulic excavators. 4,207,740, Cl. 60-486.000.
Risse, Bernd, to Vita Zahnfabrik H. Rauter KG. Kiln utilizing infrared radiation in the range of 0.7 to 1.5 μm to heat dental ceramic material. 4,208,573, Cl. 219-411.000.
Rite-Hite Corporation: *See—*
Hipp, Steven J.; and Hahn, Norbert, 4,208,161, Cl. 414-401.000.
Rivoir, Karl H. Measuring mechanism having a positive locking arrangment for wide-angle moving coil systems and method for its assembly. 4,208,628, Cl. 324-150.000.
Robbins, Max L.; and Ernst, Edwin R., to Exxon Research & Engineering Co. Process for defoaming acid gas scrubbing solutions and defoaming solutions. 4,208,385, Cl. 423-226.000.
Robert, Andre, to Upjohn Company, The. Preventing enteropooling induced diarrhea by prostacyclin or 11-oxo-prostaglandin administration. 4,208,427, Cl. 424-285.000.

Robert Bosch GmbH: *See—*
Borst, Wolfgang; Klotzner, Winfried; Pagel, Ernst-Olav; and Vetter, Hermann, 4,207,846, Cl. 123-117.00D.
Reibetanz, Wilbert; Sigg, Horst; Wiesner, Herbert; Wanner, Karl; Hansel, Gernot; Seitz, Karl; and Bleicher, Manfred, 4,207,953, Cl. 175-209.000.
Wanner, Karl; Schmid, Wolfgang; and Holzel, Martin, 4,208,058, Cl. 277-153.000.

Robert Howell Industries: *See—*
Howell, Robert V., 4,207,969, Cl. 188-71.600.

Robert Krause KG: *See—*
Schudy, Karl-Hein, 4,208,146, Cl. 402-4.000.

Robertson, Phillip E.: *See—*
Boatman, Martin R.; Robertson, Phillip E.; and Gaughan, Martin M., 4,207,702, Cl. 46-74.00D.

Robertson, Thomas S. Baseball fielding training aid and method. 4,208,051, Cl. 273-26.00C.

Rockwell International Corporation: *See—*
Saxton, Floyd G., 4,207,780, Cl. 74-710.500.
Thompson, David E.; Anderson, Dean B.; August, Rudolf R.; and Yao, Shi-kay, 4,208,128, Cl. 356-350.000.

Rodemann, Alfred H.: *See—*
Derderian, George; Mohon, Windell N.; Maldonato, Eugene D.; and Rodemann, Alfred H., 4,207,688, Cl. 35-12.00N.

Roelevink, Bauke J.; and Gelens, Johannes R., to U.S. Philips Corporation. Flashbulb unit. 4,208,700, Cl. 362-10.000.

Roger, Jack, to Compagnie Generale des Etablissements Michelin. Pneumatic tire bead seat. 4,207,940, Cl. 152-362.00R.

Rogers, B. H. Gerald: *See—*
Meiri, Samuel; Kot, Casey; Rogers, B. H. Gerald; and Epstein, Max, 4,207,872, Cl. 128-4.000.

Rogers, David M.: *See—*
Foxton, Michael W.; Gregory, Gordon I.; and Rogers, David M., 4,208,517, Cl. 544-28.000.

Rogic, Milorad M.: *See—*
Demmin, Timothy R.; and Rogic, Milorad M., 4,208,341, Cl. 260-438.100.

Rogowsky, York, to Licentia Patent-Verwaltung-G.m.b.H. Control of inverter circuit-breaker. 4,208,691, Cl. 361-79.000.

Rohm GmbH: *See—*
Kraemer, Dieter; Plainer, Hermann; and Schleier, Waldemar, 4,208,309, Cl. 260-8.000.

Rohm and Haas Company: *See—*
Lewis, Sheldon N.; and Haggard, Richard A., 4,208,313, Cl. 260-29.60R.

Rohr, Andre, to BBC Brown, Boveri & Cie. Method and apparatus for detecting fault currents in electrical networks. 4,208,692, Cl. 361-87.000.

Roiz, Ernest. Continuous contact ball and roller bearing. 4,208,077, Cl. 308-200.000.

Rollei-Werke Franke & Heidecke: *See—*
Proske, Joachim, 4,208,115, Cl. 354-201.000.
Schneider, Arthur, 4,208,617, Cl. 315-151.000.

Rollei-Werke Franke & Heidicke: *See—*
Prochnow, Claus, 4,208,113, Cl. 354-82.000.

Roller, Kent G.: *See—*
Friebel, Virgil R.; Roller, Kent G.; and Deitrick, Jack L., 4,208,629, Cl. 324-457.000.

Romera-Sierra, Cesar; and Webb, John C., to Queen's University at Kingston. Preservation of animal specimens. 4,207,689, Cl. 35-20.000.

Ronning, Patricia M.: *See—*
Errede, Louis A.; and Ronning, Patricia M., 4,207,705, Cl. 47-48.500.

Rosen, Perry: *See—*
Kienzle, Frank; and Rosen, Perry, 4,208,533, Cl. 560-122.000.

Rosen, Shelvin, to Copeland Corporation. Stator core stripping. 4,208,221, Cl. 134-19.000.

Rosenbaum, Larry A., to HPM Corporation. Coextrusion feedblock and process. 4,208,175, Cl. 425-131.100.

Rosengrants, Delbert L.: *See—*
Cope, Rick R.; and Rosengrants, Delbert L., 4,207,947, Cl. 168-29.000.

Rossell, John B.: *See—*
Cottier, Derek; and Rossell, John B., 4,208,445, Cl. 426-607.000.

Rossi, Eugene F., to Allis-Chalmers Corporation. Liquid metering and distribution arrangement for rotary reactor. 4,208,181, Cl. 432-109.000.

Rouse, Ian M.: *See—*
Webster, Dennis E.; and Rouse, Ian M., 4,208,353, Cl. 568-472.000.

Rowe, Howard; and Rowe, Paul A., to C.P.R. Engineering Developments Limited. Pressure assemblies. 4,208,045, Cl. 269-100.000.

Rowe, Paul A.: *See—*
Rowe, Howard; and Rowe, Paul A., 4,208,045, Cl. 269-100.000.

Rowley, Terry J.: *See—*
Bowman, James L.; and Rowley, Terry J., 4,207,832, Cl. 118-212.000.

Rozentals, Alfreds, to Lundquist Tool & Mfg. Co., Inc. Forming bearing housings. 4,207,659, Cl. 29-149.50B.

Rozsa, Laszlo; Petocz, Lujza; Grasser, Katalin; Kosoczky, Ibolya; Kiszelly, Eniko; and Nagy, Jozsef, to Egyt Gyogyszervegyeszeti Gyar. Dibenzo[d,g][1,3,6]dioxazocine derivatives. 4,208,410, Cl. 424-244.000.

Ruben, Samuel; and Kalker, Philip E., to eMDee Corporation. Attitude compensating liquid content indicator. 4,207,766, Cl. 73-301.000.

Rubinchik, Ilya A.: *See—*
Andrev, Anatoly G.; Makhanek, Mikhail E.; and Rubinchik, Ilya A., 4,207,669, Cl. 29-564.500.

Rudin, Stephen, to Victoreen, Inc. Hand-held shielding device for radioactive material. 4,208,588, Cl. 250-496.000.

Rueck, Jon M., to Owens-Corning Fiberglas Corporation. Process and apparatus for treatment of exhaust gases from glass melting furnaces. 4,208,201, Cl. 65-27.000.

Ruedin, Yves: *See—*
Gharadjedaghi, Fereydoun; Ruedin, Yves; and Viennet, Rene, 4,207,671, Cl. 29-592.00R.

Ruehle, William H., to Mobil Oil Corporation. Apparatus and method for enhancement of the signal-to-noise ratio in seismic data. 4,208,732, Cl. 367-42.000.

Rush, Donald L., to Westinghouse Electric Corp. Program stop control of train vehicles. 4,208,717, Cl. 364-426.000.

Russell, George A., Jr.: *See—*
Stein, Joseph L.; Russell, George A., Jr.; and Mortl, Gunther L., 4,208,214, Cl. 106-56.000.

Rustad, Mark A.: *See—*
Hammar, Walton J.; and Rustad, Mark A., 4,208,337, Cl. 260-346.220.

Ruttiger, Anton: *See—*
Vogt, Alfred; Veith, Bernd; and Ruttiger, Anton, 4,208,654, Cl. 340-351.000.

Rydell, Adam Z.: *See—*
Raudat, John L.; and Rydell, Adam Z., 4,207,721, Cl. 53-248.000.

Ryder, Dennis M., to Reyrolle Parsons Limited. Detection of analysis of particulate material in fluid streams. 4,208,583, Cl. 250-302.000.

Rynard, Richard H. J., to Canadian General Electric Company Limited. Thermostatically controlled electric engine coolant heater. 4,208,570, Cl. 219-208.000.

Sabbioni, Cesare, to CIMA S.p.A. di C. Sabbioni & C. Gear cutting machine with a hob. 4,208,155, Cl. 409-3.000.

Saconney, Jean E.; and Caloyannis, Theodore, to Societe Generale pour l'Emballage. Method and apparatus for optically detecting defects in a transparent object. 4,208,130, Cl. 356-428.000.

Safadago, Gary J.; and Troxell, Truxton B., to Safadago, Gary J. Therapeutic apparatus for use in treatment of muscular and skeletal disorders. 4,207,879, Cl. 128-70.000.

Saho, Norihide: *See—*
Nakazato, Norio; Saho, Norihide; Yoshimatsu, Sachihiro; and Okabe, Michimasa, 4,208,199, Cl. 62-29.000.

Sai, Fumio; and Fujino, Takashi, to Kao Soap Co., Ltd. Bleaching detergent composition. 4,208,295, Cl. 252-94.000.

Sai-Halasz, George A.: *See—*
Chang, Leroy L.; Esaki, Leo; and Sai-Halasz, George A., 4,208,667, Cl. 357-16.000.

St. Laurent, Wilfred H., Jr., to Bellofram Corporation. Sealed shaft. 4,208,060, Cl. 277-212.0FB.

St. Regis Paper Company: *See—*
Watkins, John J.; and Timpe, Winfried G., deceased, 4,208,245, Cl. 162-31.000.

Saito, Kunio: *See—*
Chono, Masazumi; Maeda, Kunio; and Saito, Kunio, 4,208,320, Cl. 260-45.8NT.

Saito, Tadashi: *See—*
Kuzuwata, Masayuki; Machida, Hazime; Tamura, Hiroshi; and Saito, Tadashi, 4,208,212, Cl. 106-2.000.

Sakai, Tadao; and Kawai, Masayoshi, to Fuji Photo Film Co., Ltd. Process for forming an optical soundtrack. 4,208,210, Cl. 430-140.000.

Sakata, Ko: *See—*
Imaizumi, Masao; Yasuda, Mitsuo; Sakata, Ko; and Hirano, Noboru, 4,208,540, Cl. 585-809.000.

Sakata, Tadashi: *See—*
Kiga, Shotaro; Yoshida, Naoshi; Edahiro, Kenichi; and Sakata, Tadashi, 4,208,246, Cl. 162-106.000.

Sakuyama, Shigeru: *See—*
Kurono, Masayasu; Hamanaka, Nobuyuki; Sakuyama, Shigeru; Chiba, Takeshi; and Nakai, Hisao, 4,208,428, Cl. 424-305.000.

Salerno, Joseph F., to Litton Industrial Products, Inc. Time independent cycle control for plastic injection molding machines. 4,208,176, Cl. 425-139.000.

Sample, Thomas E., Jr., to Dresser Industries, Inc. Drill cuttings disposal system with good environmental and ecological properties. 4,208,285, Cl. 210-180.000.

Sanczuk, Stefan; and Hermans, Hubert K. Fr., to Janssen Pharmaceutica N.V. N-Aryl-N-(1-alkyl-4-piperidinyl)arylacetamides. 4,208,418, Cl. 424-267.000.

Sandeman, Allan M.; and Bell, James D., to Tay Textiles Limited. Flexible bulk container. 4,207,937, Cl. 150-1.000.

Sanders Associates, Inc.: *See—*
Babikyan, Jirair A., 4,208,736, Cl. 367-153.000.

Sanders, James M.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,208,297, Cl. 252-174.110.

Sandler, Stanley R., to Pennwalt Corporation. Polyamide resins flame retarded by poly(metal phosphinate)s. 4,208,321, Cl. 260-45.75K.

Sandler, Stanley R., to Pennwalt Corporation. Polyester-polyamide resins flame retarded by poly(metal phosphinate)s. 4,208,322, Cl. 260-45.75K.

Sandoz, Inc.: *See—*
Barcza, Sandor, 4,208,408, Cl. 424-184.000.

Nadelson, Jeffrey, 4,208,532, Cl. 548-248.000.
Sandoz Ltd.: *See—*
Amati, Werner, 4,208,345, Cl. 260-507.00R.
Egger, Helmut; and Reinshagen, Hellmuth, 4,208,326, Cl. 260-239.0BF.
Sands, John L.: *See—*
Paget, Charles J.; and Sands, John L., 4,208,419, Cl. 424-270.000.
Sandvik Aktiebolag: *See—*
Giege, Sture; and Lagerqvist, Torgny C. B., 4,208,147, Cl. 29-117.000.
Sangamo Weston, Inc.: *See—*
Philpott, Conrad L.; and Blase, Emil F., 4,208,699, Cl. 361-433.000.
Sangster, Arlon G.; Casberg, John M.; and Tepas, Joseph J., to Olin Corporation. Water treatment chemical dispenser with control tube. 4,208,376, Cl. 422-261.000.
Santefort, Richard A., to Valco Cincinnati, Inc. Glue application apparatus for use with can labeling machines and the like. 4,208,236, Cl. 156-356.000.
Sanyo Electric Co., Ltd.: *See—*
Hosoya, Nobukazu, 4,208,705, Cl. 363-19.000.
Sarazen, Paul M., Jr.: *See—*
Beam, Dennis A., Jr.; and Sarazen, Paul M., Jr., 4,208,010, Cl. 236-49.000.
Sarides, Athanase K. Apparatus for detecting pressure in pneumatic tires. 4,208,649, Cl. 340-58.000.
Sasahara, Kiyoshi: *See—*
Takata, Yataro; Takenoshita, Yukinori; Sasahara, Kiyoshi; Shigaki, Akira; Hirai, Kazuo; Maeda, Kosei; Tadokuro, Hideo; and Maeda, Hirokazu, 4,207,807, Cl. 92-128.000.
Sasaki, Fumiyoshi: *See—*
Suzuki, Fumiyoshi; Sasaki, Fumiyoshi; and Nishinomiya, Guen, 4,208,735, Cl. 367-136.000.
Sasaki, Yutaka; Ikeda, Yoneichi; Tashiro, Masaharu; and Nakamura, Toshio, to Nitto Chemical Industry Co., Ltd. Process for regenerating iron-antimony oxide containing catalyst. 4,208,303, Cl. 252-417.000.
Saso, Michael. Game call. 4,207,703, Cl. 46-177.000.
Satake Engineering Co., Ltd.: *See—*
Satake, Toshihiko; Yanagihara, Hiromichi; and Horie, Takashi, 4,208,274, Cl. 209-44.200.
Satake, Kunio: *See—*
Fukawa, Isaburo; Satake, Kunio; Yamada, Tsuyoshi; Hayakawa, Kiyoshi; and Sato, Yasushi, 4,208,356, Cl. 525-89.000.
Satake, Toshihiko; Yanagihara, Hiromichi; and Horie, Takashi, to Satake Engineering Co., Ltd. Rotary cylinder type grain separator. 4,208,274, Cl. 209-44.200.
Sato, Akira: *See—*
Hom-ma, Yoshio; Nozawa, Hisao; Sato, Akira; and Haada, Seiki, 4,208,257, Cl. 204-129.650.
Sato, Atsushi; Shimizu, Isoo; and Matsuzaka, Eiichi, to Nippon Petrochemicals Company, Limited. Method of processing thermal cracked by-product oil. 4,208,268, Cl. 208-46.000.
Sato, Masanobu; Satoh, Ken; Nakao, Toshihiro; and Furuta, Kenzi, to Olympus Optical Co., Ltd. Tape recorder with means for displaying a time by normal and stopwatch modes. 4,208,686, Cl. 360-137.000.
Sato, Naomi: *See—*
Okada, Fumio; Kishita, Hirofumi; and Sato, Naomi, 4,208,312, Cl. 260-29.20M.
Sato, Takeshi: *See—*
Yasugahira, Norio; Sato, Takeshi; and Tsubouchi, Kuniyoshi, 4,208,167, Cl. 415-217.000.
Sato, Yasushi: *See—*
Fukawa, Isaburo; Satake, Kunio; Yamada, Tsuyoshi; Hayakawa, Kiyoshi; and Sato, Yasushi, 4,208,356, Cl. 525-89.000.
Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Constant printing pressure mechanisms for label printing machine. 4,207,816, Cl. 101-291.000.
Satoh, Ken: *See—*
Sato, Masanobu; Satoh, Ken; Nakao, Toshihiro; and Furuta, Kenzi, 4,208,686, Cl. 360-137.000.
Satzinger, Gerhard: *See—*
Herrmann, Wolfgang; and Satzinger, Gerhard, 4,208,526, Cl. 546-209.000.
Saucy, Gabriel: *See—*
Cohen, Noal; and Saucy, Gabriel, 4,208,331, Cl. 260-340.90R.
Cohen, Noal; and Saucy, Gabriel, 4,208,332, Cl. 260-340.90R.
Saunders, Ronald J., to Raytheon Company. Modular microstrip transmission line circuitry. 4,208,642, Cl. 333-246.000.
Saurenman, Donald G., to Consan Pacific Incorporated. Ion enhanced smoke treatment of edibles. 4,208,438, Cl. 426-235.000.
Savell, Jesse J., Jr.; and Coffey, Jess R. Drain means. 4,207,632, Cl. 4-288.000.
Sawada, Shinji: *See—*
Takahashi, Shigekazu; and Sawada, Shinji, 4,207,732, Cl. 368-76.000.
Sawafuji Electric Co. Ltd.: *See—*
Hazumi, Kenji; Tanaka, Tsutomu; and Tagami, Katsutoshi, 4,208,710, Cl. 363-96.000.
Sawai, Masanobu; Sudo, Tadamitsu; and Enomoto, Shogo, to Mitsubishi Chemical Industries Limited. Method and apparatus for the measurement of antigens and antibodies. 4,208,185, Cl. 23-230.00B.
Saxton, Floyd G., to Rockwell International Corporation. Multi-speed planetary drive axle assembly. 4,207,780, Cl. 74-710.500.
Scarpi, Bruno D. Process and apparatus for harnessing the energy of the swell. 4,207,739, Cl. 60-398.000.
Scates, Allen E.: *See—*
Perrine, James J.; and Scates, Allen E., 4,208,050, Cl. 273-1.50A.
Schaaf, Cecil; McIntosh, Russell J.; and Morton, David C., to Kakuris, Paul A. Concrete block wall. 4,207,718, Cl. 52-585.000.
Schaar, Charles H., to Colgate-Palmolive Company. Diaper with extensible fastener. 4,207,895, Cl. 128-287.000.
Schafer, Manfred, to Werner & Pfleiderer. Temperature controllable heater plate for molds. 4,208,574, Cl. 219-539.000.
Schayes, Raymond G. G.; and Gustin, Pol A. G. J., to U.S. Philips Corporation. Facsimile circuit. 4,208,677, Cl. 358-280.000.
Schegolev, Gennady K.: *See—*
Pershin, Gennady D.; Zalyaljutdinov, Klim G.; Gimazetdinov, Rais F.; Egorov, Vladimir D.; and Schegolev, Gennady K., 4,207,928, Cl. 140-115.000.
Schenk, William D. Apparatus for printing serial numbers with check digits. 4,207,814, Cl. 101-76.000.
Schenker, Barry A.: *See—*
Lewis, David L.; Schenker, Barry A.; Suchanski, Mary R.; and Franks, C. Richard, deceased, 4,208,450, Cl. 427-126.300.
Scherr-Tumico, Inc.: *See—*
Poage, Melvin L., 4,207,679, Cl. 33-166.000.
Scherrer, Robert A.; Hammar, Walton J.; and Stern, Richard M., to Riker Laboratories, Inc. Acidic 3-phenylbenzofurans. 4,208,335, Cl. 260-346.220.
Scherrer, Robert A., to Riker Laboratories, Inc. Certain 3-bromomethylphenyl-2-bromo-benzofurans. 4,208,336, Cl. 260-346.220.
Schewe, Lothar: *See—*
Turk, Herbert; Honigmann, Gunter; Martens, Gerhard; and Schewe, Lothar, 4,208,560, Cl. 219-10.49R.
Schiedermayer, Marvin L.: *See—*
Hipkins, Dennis R.; and Schiedermayer, Marvin L., 4,208,621, Cl. 318-138.000.
Schinitsky, Michael R., to Eli Lilly and Company. Vinblastine in rheumatoid arthritis. 4,208,414, Cl. 424-262.000.
Schleier, Waldemar: *See—*
Kraemer, Dieter; Plainer, Hermann; and Schleier, Waldemar, 4,208,309, Cl. 260-8.000.
Schlickenrieder, Lynn M.: *See—*
Bergfeld, Robert A.; Patel, Shashi P.; and Schlickenrieder, Lynn M., 4,208,496, Cl. 525-3.000.
Schlotterbeck, Manfred, to Mahle GmbH. Piston. 4,207,844, Cl. 123-32.00B.
Schlumberger Technology Corporation: *See—*
Schweitzer, Jeffrey S.; and Tapphorn, Ralph M., 4,208,580, Cl. 250-262.000.
Schmid, Walter, to Bachofen & Meier, Maschinenfabrik. Vacuum roller. 4,207,998, Cl. 226-95.000.
Schmid, Wolfgang: *See—*
Wanner, Karl; Schmid, Wolfgang; and Holzel, Martin, 4,208,058, Cl. 277-153.000.
Schmidt, Edward D. Electrically separating a food paste. 4,208,440, Cl. 426-244.000.
Schmidt, Johan M.: *See—*
Peek, Johannes B. H.; and Schmidt, Johan M., 4,208,634, Cl. 330-149.000.
Schmidt, Manfred; Cohnen, Wolfgang; Kleiner, Frank; Freitag, Dieter; and Idel, Karsten, to Bayer Aktiengesellschaft. Polycarbonate molding compositions with improved flame-repellency. 4,208,489, Cl. 525-146.000.
Schmitt, Frederick L.: *See—*
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,208,308, Cl. 252-522.00R.
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,208,296, Cl. 252-174.110.
Schmucki, Josef, to Elektrowatt AG. Thermostatic expansible work element. 4,207,767, Cl. 73-363.000.
Schneider, Abraham: *See—*
Myers, Harry K., Jr.; and Schneider, Abraham, 4,208,355, Cl. 585-362.000.
Schneider, Arthur, to Rollei-Werke Franke & Heidecke. Light measuring unit for an electronic flash device. 4,208,617, Cl. 315-151.000.
Schock, B. Dwain. Luminous toy. 4,208,701, Cl. 362-202.000.
Schoenfeld, Herbert. Universal spring stabilizer. 4,208,044, Cl. 267-48.000.
Scholten, Gerard J. Archery bow. 4,207,859, Cl. 124-24.00R.
Schommer, Oliver J., to Tech-Aid Inc. Marking apparatus and method therefor. 4,207,813, Cl. 101-4.000.
Schreiber, William L.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,208,297, Cl. 252-174.110.
Schrock, Andrew J. Wood-coal heating unit. 4,207,860, Cl. 126-77.000.
Schroeder, Earle E.; and Campbell, John D., to Allis-Chalmers Corporation. Adjustable wear ring for a centrifugal pump. 4,208,166, Cl. 415-170.00A.
Schubert, Bernhard: *See—*
Tolasch, Gerhard; Schubert, Bernhard; and Menge, Gunter, 4,207,720, Cl. 53-151.000.
Schudy, Karl-Hein, to Robert Krause KG. Suspension device for ring binders. 4,208,146, Cl. 402-4.000.

Schukoff, Bruno: *See—*
List, Hans; Pachernegg, Siegfried; and Schukoff, Bruno, 4,207,843, Cl. 123-30.00D.
Schulein, Rolf G.: *See—*
Liebscher, Johannes; and Schulein, Rolf G., 4,207,641, Cl. 15-41.00R.
Schumag GmbH: *See—*
Dashwood, Nigel J. R.; and Plummer, Dexter R., 4,208,589, Cl. 250-560.000.
Schurter, Rolf: *See—*
Tobler, Hans; Fory, Werner; and Schurter, Rolf, 4,208,202, Cl. 71-88.000.
Schuster, Ludwig: *See—*
Stutz, Herbert; Illers, Karl H.; and Schuster, Ludwig, 4,208,507, Cl. 528-64.000.
Schutte, Richard W.: *See—*
Becker, Henry E.; McConnell, Albert L.; and Schutte, Richard W., 4,208,459, Cl. 428-154.000.
Schutz, Richard A.: *See—*
Exbrayat, Pierre E.; and Schutz, Richard A., 4,207,729, Cl. 57-296.000.
Schwartau, Daniel J.: *See—*
Schwartau, Merle C.; Schwartau, Daniel J.; and Schwartau, David R., 4,207,837, Cl. 119-14.030.
Schwartau, David R.: *See—*
Schwartau, Merle C.; Schwartau, Daniel J.; and Schwartau, David R., 4,207,837, Cl. 119-14.030.
Schwartau, Merle C.; Schwartau, Daniel J.; and Schwartau, David R. Apparatus for a dairy barn. 4,207,837, Cl. 119-14.030.
Schwartz, James W., to Zenith Radio Corporation. Television picture tubes having an electron gun with aperture electrode shielding means. 4,208,610, Cl. 313-414.000.
Schwarz, Michael. Method and apparatus for recovering heat from waste water. 4,207,752, Cl. 62-238.000.
Schweitzer, Jeffrey S.; and Tapphorn, Ralph M., to Schlumberger Technology Corporation. Lithology determination from the calcium and magnesium activation lines. 4,208,580, Cl. 250-262.000.
Schweizer, Russell J.: *See—*
Patel, Bhupendra C.; Schweizer, Russell J.; and Smith, Jesse C., 4,207,900, Cl. 128-349.00B.
Schwemin, Arnold J., to Energy Dynamics, Inc. Drive mechanism for piston engines. 4,207,774, Cl. 74-42.000.
Schwickert, Russell C.: *See—*
Monaghan, Kevin J.; Schwickert, Russell C.; and Makuch, John A., 4,208,092, Cl. 350-96.210.
Schwiecker, Horst; Thorn, Gernot; and Ehrl, Hans-Peter, to Leybold-Heraeus GmbH & Co. KG. Arrangement and photometer for measuring and controlling the thickness of optically active thin layers. 4,207,835, Cl. 118-664.000.
Scientific Micro Systems, Inc.: *See—*
Fazakerly, William B.; and Hafeman, Daniel R., 4,208,635, Cl. 331-17.000.
SCM Corporation: *See—*
Gilmore, Cecilia; and Miller, Donald E., 4,208,444, Cl. 426-570.000.
Scremin, Gerard; and Urbano, Nino, to Application des Gaz. System of fastening an apparatus on a cartridge of fluid under pressure. 4,207,934, Cl. 141-383.000.
Scribner, Albert W. Stock feeder for punch presses and the like. 4,207,999, Cl. 226-150.000.
Scrivo, Leonard; Binner, Paul; and Weinstein, Louis, to Vicon Products Corp. Electrically isolated control means for the illuminating source of a dental drill. 4,208,579, Cl. 250-227.000.
Seco Maschinenbau GmbH & Co KG: *See—*
Biesinger, Erwin; and Mollendorf, Eckard, 4,207,638, Cl. 8-150.000.
Seehofer, Friedlieb; and Kalies, Helmut, to B.A.T. Company Limited. Method of making a cigarette. 4,207,906, Cl. 131-21.00D.
Seiko Koki Kabushiki Kaisha: *See—*
Kitai, Kiyoshi; Morino, Yukio; Kato, Shogo; and Watanabe, Masanori, 4,208,111, Cl. 354-33.000.
Seitz, Karl: *See—*
Reibetanz, Wilbert; Sigg, Horst; Wiesner, Herbert; Wanner, Karl; Hansel, Gernot; Seitz, Karl; and Bleicher, Manfred, 4,207,953, Cl. 175-209.000.
Seki, Hidehiko, to Kabushiki Kaisha Suwa Seikosha. Electronic timepiece control circuit. 4,207,731, Cl. 368-29.000.
Sekiya, Setsuro: *See—*
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,207,849, Cl. 123-139.0AW.
Sekula, Milan; and Sekula, Nikola. Device with rotating brush and built-in liquid washing agents feeder. 4,207,640, Cl. 15-29.000.
Sekula, Nikola: *See—*
Sekula, Milan; and Sekula, Nikola, 4,207,640, Cl. 15-29.000.
Selnitsyn, Mikhail G.: *See—*
Svetlov, Sergei A.; Mokin, Valentin S.; Shneiderman, Mark S.; Selnitsyn, Mikhail G.; Lupin, Vladimir A.; Penyaskin, Timofei I.; Stepanov, Gennady P.; Reger, Ivan Y.; and Timkin, Nikolai I., 4,208,040, Cl. 266-121.000.
Semmler, Franz. Apparatus for controlling fuel supply to an engine. 4,207,845, Cl. 123-102.000.
Semprini, Pio: *See—*
Castriotta, Michele; de Bosio, Alfredo; De Micheli, Spiridione; Lobisch, Gunter; Manucci, Franco; and Semprini, Pio, 4,208,552, Cl. 179-175.20D.
Senco Products, Inc.: *See—*
Becht, Carl T., 4,207,898, Cl. 128-305.000.
Sepavich, Victor F., to Crompton & Knowles Corporation. Loom projectile. 4,207,926, Cl. 139-196.300.
Sethi, Gurdip S.: *See—*
Harvey, Frederick W.; and Sethi, Gurdip S., 4,208,117, Cl. 354-275.000.
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., to Ethicon, Inc. Isomorphic copolyoxalates and sutures thereof. 4,208,511, Cl. 528-272.000.
Sharp Kabushiki Kaisha: *See—*
Fujimoto, Isao; Kasubuchi, Takeshi; and Sumitomo, Yuji, 4,208,139, Cl. 400-126.000.
Mattori, Hiroaki, 4,208,664, Cl. 346-15.000.
Shimizu, Masahiro, 4,208,046, Cl. 271-122.000.
Shaw, Robert F. Surgical instrument having self-regulating dielectric heating of its cutting edge. 4,207,896, Cl. 128-303.100.
Sheinberg, Lawrence: *See—*
Strauss, Herbert S.; and Sheinberg, Lawrence, 4,208,614, Cl. 315-73.000.
Sheldon, Edward J.; Brown, William C., Jr.; Shovlin, Thomas D.; and Wagner, Ronald A., to Raytheon Company. Radar receiver. 4,208,632, Cl. 328-117.000.
Shell Oil Company: *See—*
Carr, John B., 4,208,424, Cl. 424-278.000.
Kouwenhoven, Herman W.; and Stork, Willem H. J., 4,208,305, Cl. 252-431.00N.
Zweig, Judith E., 4,208,315, Cl. 260-33.6AQ.
Shelly, William A.: *See—*
Porter, Marion G.; Shelly, William A.; and Norman, Robert W., Jr., 4,208,716, Cl. 364-200.000.
Shepherd, Thomas H. Process for the production of contact lenses. 4,208,364, Cl. 264-1.000.
Sheremet, Alexei A.: *See—*
Olshvang, Mikhail V.; Tsfasman, Grigory M.; and Sheremet, Alexei A., 4,208,707, Cl. 363-35.000.
Sheridan, John J.: *See—*
Jones, Billy R.; and Sheridan, John J., 4,208,615, Cl. 315-83.000.
Sherman Industries, Inc.: *See—*
Beer, Carl C.; and Steffey, Ronald E., 4,207,643, Cl. 15-97.00B.
Shibasaki, Ichiro: *See—*
Ohmura, Kaoru; Shibasaki, Ichiro; and Kimura, Takeo, 4,208,477, Cl. 430-281.000.
Shibatani, Juichi: *See—*
Ishikawa, Masakazu; Oka, Hiroyuki; Shibatani, Juichi; and Obu, Yuichiro, 4,207,971, Cl. 188-218.00A.
Shibuya, Koichi: *See—*
Ono, Seibei; and Shibuya, Koichi, 4,208,318, Cl. 260-40.00P.
Shields, James J.: *See—*
Yannone, Robert A.; and Shields, James J., 4,208,591, Cl. 290-40.00R.
Shigaki, Akira: *See—*
Takata, Yataro; Takenoshita, Yukinori; Sasahara, Kiyoshi; Shigaki, Akira; Hirai, Kazuo; Maeda, Kosei; Tadokuro, Hideo; and Maeda, Hirokazu, 4,207,807, Cl. 92-128.000.
Shih, David H.: *See—*
Christensen, Burton G.; and Shih, David H., 4,208,422, Cl. 424-274.000.
Shimizu, Fumio, to Tokico Ltd. Disc brake. 4,207,970, Cl. 188-71.900.
Shimizu, Isoo: *See—*
Sato, Atsushi; Shimizu, Isoo; and Matsuzaka, Eiichi, 4,208,268, Cl. 208-46.000.
Shimizu, Kenichi: *See—*
Watanabe, Minoru; Nishimura, Toshio; Omi, Tadao; Koomoto, Kotaro; Kobuya, Tomohiko; and Shimizu, Kenichi, 4,208,611, Cl. 313-487.000.
Shimizu, Masahiro, to Sharp Kabushiki Kaisha. Sheet feeding assembly. 4,208,046, Cl. 271-122.000.
Shin-Etsu Chemical Co. Ltd.: *See—*
Okada, Fumio; Kishita, Hirofumi; and Sato, Naomi, 4,208,312, Cl. 260-29.20M.
Shindler, Harry A., to Nuclear & Environmental Protection, Inc. Hood assembly with noise filter. 4,207,883, Cl. 128-201.220.
Shinohara, Toshio: *See—*
Sogi, Shinroku; Yoshinaga, Makoto; Shinohara, Toshio; Aihara, Takayuki; and Tawara, Ikuo, 4,208,484, Cl. 435-286.000.
Shinto Paint Co., Ltd.: *See—*
Kubo, Akira; Todoroki, Nobuaki; Teshima, Yasuhiko; Kuranami, Nobuo; Tsutsui, Nobukazu; and Kasai, Akio, 4,208,262, Cl. 204-181.00T.
Todoroki, Nobuaki; and Yasukawa, Junichi, 4,208,261, Cl. 204-181.00C.
Shionoya, Hiroshi: *See—*
Minami, Norio; Kijima, Shizumasa; Katayama, Satoshi; and Shionoya, Hiroshi, 4,208,426, Cl. 424-283.000.
Shneiderman, Mark S.: *See—*
Svetlov, Sergei A.; Mokin, Valentin S.; Shneiderman, Mark S.; Selnitsyn, Mikhail G.; Lupin, Vladimir A.; Penyaskin, Timofei I.; Stepanov, Gennady P.; Reger, Ivan Y.; and Timkin, Nikolai I., 4,208,040, Cl. 266-121.000.
Shovlin, Thomas D.: *See—*
Sheldon, Edward J.; Brown, William C., Jr.; Shovlin, Thomas D.; and Wagner, Ronald A., 4,208,632, Cl. 328-117.000.
Shrum, Lorne R. Method of continuous casting of metal in a tapered mold and mold per se. 4,207,941, Cl. 164-82.000.
Shueh, Samuel B.; and Williams, Louis C., to General Electric Company. Drain system for household refrigerator. 4,207,753, Cl. 62-285.000.

Shuster, Edward J.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,208,297, Cl. 252-174.110.

Siegal, Burton L., to Kiwi Coders Corporation. Concentric spring supported resilient inking wheel. 4,207,817, Cl. 101-348.000.

Siemens Aktiengesellschaft: *See—*
Hoffmann, Kurt; and Sigusch, Reiner, 4,208,670, Cl. 357-45.000.
Krause, Heinz, 4,208,633, Cl. 330-56.000.
Krimmel, Eberhard, 4,208,668, Cl. 357-24.000.

Siemens-Allis, Inc.: *See—*
Patel, Amrut R.; and Hansen, Donald M., 4,208,556, Cl. 200-148.00E.
Ringland, William L., 4,208,620, Cl. 318-111.000.

Sierputowski, Piotr: *See—*
Ostrowski, Jerzy; Sierputowski, Piotr; Turkowski, Lukasz; Jablkiewicz, Jerzy; Pacholski, Jan; and Jedryka, Tadeusz, 4,207,728, Cl. 57-58.890.

Sieurin, Sven I., to Granges Weda AB. Holding vessel. 4,208,043, Cl. 266-275.000.

Sigg, Horst: *See—*
Reibetanz, Wilbert; Sigg, Horst; Wiesner, Herbert; Wanner, Karl; Hansel, Gernot; Seitz, Karl; and Bleicher, Manfred, 4,207,953, Cl. 175-209.000.

Signet Corporation: *See—*
Dick, Perry J., Jr., 4,208,188, Cl. 44-10.00R.

Sigusch, Reiner: *See—*
Hoffmann, Kurt; and Sigusch, Reiner, 4,208,670, Cl. 357-45.000.

Silber, Dieter; Fullman, Marius; Finck, Karl-Julius; and Winter, Wolfgang, to Licentia Patent-Verwaltungs G.m.b.H. Controllable semiconductor rectifier with interference potential compensation. 4,208,669, Cl. 357-38.000.

Silbernagel, Bernard G.: *See—*
Jacobson, Allan J.; and Silbernagel, Bernard G., 4,208,474, Cl. 429-191.000.

Simeau, Bernard J. Method and apparatus for reducing noise in stereophonic signals. 4,208,547, Cl. 179-1.0GD.

Simkens, Marcellus C. P. L. Apparatus for making ice blocks. 4,207,750, Cl. 62-138.000.

Simon, Willi: *See—*
Dahlhaus, Peter; Simon, Willi; and Striepeke, Wilhelm, 4,208,011, Cl. 238-281.000.

Singer Company, The: *See—*
Edwards, William J., 4,207,826, Cl. 112-184.000.
Eisenberg, Robert M., 4,208,721, Cl. 364-731.000.
Hass, Robert N.; and Mazzini, Carl A., 4,207,687, Cl. 35-12.00R.
Lotz, Robert W.; and Westerman, David J., 4,208,719, Cl. 364-515.000.
Previte, Peter L., 4,207,668, Cl. 29-434.000.

Singh, Krishna P.: *See—*
Holtz, Maurice; Singh, Krishna P.; and Soler, Alan I., 4,207,944, Cl. 165-82.000.

Sitzler, Edward R. Microwave oven shelf with embedded grille. 4,208,561, Cl. 219-10.55E.

Sivers, Rolf V.; and Layher, Ulrich, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Device for reduction of bending vibrations. 4,207,957, Cl. 180-70.00P.

Sjovall, Stig L., to Skogsstyrelsen. Machine for the root-pruning of plants growing in rows. 4,207,949, Cl. 172-68.000.

Skachkov, Jury V.: *See—*
Popov, Jury S.; Gorbunov, Gennady S.; Skachkov, Jury V.; and Badrukhin, Jury I., 4,208,598, Cl. 310-64.000.

Skogsstyrelsen: *See—*
Sjovall, Stig L., 4,207,949, Cl. 172-68.000.

Slidex Corporation: *See—*
Namiki, Naokuni, 4,207,980, Cl. 206-456.000.

Sloan, Albert H. Header assembly and jetting adapter for well point pumping apparatus. 4,207,921, Cl. 137-616.000.

Small, William M., to Phillips Petroleum Company. Stepwise turndown by closing heat exchanger passageways responsive to measured flow. 4,208,198, Cl. 62-21.000.

Smiley, Robert A., to Du Pont de Nemours, E. I., and Company. Oxazole removed from acrylonitrile as oxazole sulfate. 4,208,329, Cl. 548-239.000.

Smith, Bobby L., to Medtronic, Inc. Pacing generator programming apparatus including error detecting means. 4,208,008, Cl. 371-15.000.

Smith, Ernest L., to Phillips Petroleum Company. Package and method of package use. 4,207,725, Cl. 53-471.000.

Smith, Eugene L., Jr.: *See—*
Wang, Samuel S.; Smith, Eugene L., Jr.; and Huliganga, Ernie F., 4,208,487, Cl. 521-117.000.

Smith, Jesse C.: *See—*
Patel, Bhupendra C.; Schweizer, Russell J.; and Smith, Jesse C., 4,207,900, Cl. 128-349.00B.

Smith, Ruby E.; and Imel, Margi, to Imel, Margi. Inflatable body support for use with bedpan. 4,207,633, Cl. 5-90.000.

SmithKline Corporation: *See—*
Bondinell, William E.; and Pendleton, Robert G., 4,208,430, Cl. 424-326.000.

Smoky Mountain Enterprises, Inc.: *See—*
Buckner, Carrol E., 4,207,861, Cl. 126-83.000.

Snaper, Alvin A.; and Zulauf, Gary B., to Gulf & Western Manufacturing Company. Magnetically actuated mercury switch. 4,208,643, Cl. 335-52.000.

Snow, John D. Puzzle game having members arrangeable into preselected sequence. 4,208,052, Cl. 273-113.000.

Sobieski, John C.: *See—*
Harmon, Thomas F.; and Sobieski, John C., 4,208,645, Cl. 337-297.000.

Socapex: *See—*
Malsot, Christian, 4,208,095, Cl. 350-96.210.

Societe Anonyme de Telecommunications: *See—*
Delebecque, Robert P.; Goupil, Georges A.; and Velte, Andre J., 4,208,619, Cl. 318-4.000.

Societe Anonyme Dite: ARTUS: *See—*
Tardieu, Pierre, 4,208,601, Cl. 310-231.000.

Societe d'Assistance Technique Pour Produits Nestle S.A.: *See—*
Hsu, Jau Y., 4,208,439, Cl. 426-242.000.

Societe Generale pour l'Emballage: *See—*
Saconney, Jean E.; and Caloyannis, Theodore, 4,208,130, Cl. 356-428.000.

Societe Nationale Elf Aquitaine (Production): *See—*
Bimond, Jean-Pierre; Etcheverria, Jean-Michel; Lazarre, Flavien; and Veron, Andre, 4,207,806, Cl. 92-31.000.
Etcheverria, Jean-Michel; Lazarre, Flavien; and Poujol, Pierre, 4,208,195, Cl. 55-159.000.

Societe Suisse pour l'Industrie Horlogere Mangagement Services S.A.: *See—*
Fluehmann, Werner, 4,207,777, Cl. 74-462.000.

Sogi, Shinroku; Yoshinaga, Makoto; Shinohara, Toshio; Aihara, Takayuki; and Tawara, Ikuo, to Olympus Optical Co., Ltd. Apparatus for handling centrifuge tubes in automatic culture system. 4,208,484, Cl. 435-286.000.

Soler, Alan I.: *See—*
Holtz, Maurice; Singh, Krishna P.; and Soler, Alan I., 4,207,944, Cl. 165-82.000.

Solid State Scientific Inc.: *See—*
Stickel, Tedd, 4,208,639, Cl. 331-116.0FE.

Solomin, Vladimir A.: *See—*
Popov, Alexandr D.; and Solomin, Vladimir A., 4,208,596, Cl. 310-13.000.

Solvay & Cie.: *See—*
Dauphin, Rene; and Maquet, Nestor, 4,208,462, Cl. 428-265.000.

Sony Corporation: *See—*
Kuniyoshi, Yasunobu; Okada, Takashi; and Sumi, Takao, 4,208,674, Cl. 358-8.000.
Numakura, Toshihiko, 4,208,673, Cl. 358-8.000.
Suzuki, Tadao; and Wachi, Shigeaki A., 4,208,706, Cl. 363-26.000.

Sor, Kamil. Process for cold pressing finely ground metals. 4,208,209, Cl. 75-232.000.

Sorenson, Paul H.: *See—*
Quigley, William A.; and Sorenson, Paul H., 4,208,192, Cl. 55-5.000.

Sorenson, Robert K., to Dresser Industries, Inc. Journal and pilot bearings with alternating surface areas of wear resistant and anti-galling materials. 4,207,658, Cl. 29-149.5PM.

Sorenson, Virgil H. Ladder adjusting and stabilizing apparatus. 4,207,886, Cl. 182-172.000.

Sotter, John G.: *See—*
Arand, John K.; Muzio, Lawrence J.; and Sotter, John G., 4,208,386, Cl. 423-235.000.

Spaziante, Placido M.: *See—*
Giuffre, Luigi; Spaziante, Placido M.; Pozzi, Vittorio; and Modica, Giovanni, 4,208,455, Cl. 427-341.000.

Spembly Limited: *See—*
Lloyd, John W.; Wild, David E.; and Evatt, Humphry R., 4,207,897, Cl. 128-303.100.

Spence-Bate, Harry A. H.; and Hargreaves, William W. Photographic film developer. 4,208,119, Cl. 354-322.000.

Spencer, Donald J., to United States of America, Air Force. Sensitive laser spectroscopy measurement system. 4,208,129, Cl. 356-425.000.

Sperry Corporation: *See—*
McMahon, Donald H., 4,208,651, Cl. 340-146.30E.
Paul, Maynard C.; and Lo, David S., 4,208,725, Cl. 365-87.000.
Rattlingourd, Glen D., 4,208,724, Cl. 364-900.000.

Spicer, James R.: *See—*
Burns, David; and Spicer, James R., 4,207,918, Cl. 137-375.000.

Sprague, Richard L., to General Motors Corporation. Ignition distributor rotor having a silicone varnish coated output segment for suppressing noise and a method of manufacture therefor. 4,208,554, Cl. 200-19.0DR.

Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. 2-Oxabicycloоctane derivatives in perfume compositions. 4,208,308, Cl. 252-522.00R.

Sprecker, Mark A.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,208,297, Cl. 252-174.110.

Square D Company: *See—*
Dickens, James W.; McGinnis, James P.; and Zylstra, Henry J., 4,208,693, Cl. 361-94.000.
Dunham, Robert W.; McGinnis, James P.; and Zylstra, Henry J., 4,208,689, Cl. 361-48.000.
McGinnis, James P.; and Zylstra, Henry J., 4,208,690, Cl. 361-48.000.

Staar, S.A.: *See—*
Demol, Jean-Baptiste, 4,208,023, Cl. 242-198.000.

Stackman, Robert W.; and Conciatori, Anthony B., to Celanese Corporation. Curable resin compositions. 4,208,502, Cl. 526-292.000.

Staff, Charles H.: *See—*
Kanuch, George M.; and Staff, Charles H., 4,208,443, Cl. 426-331.000.

Stahl, Fritz; and Steffen, Horst, to Kollmorgen Technologies Corporation. Process and device for the production of metal-complex compounds suitable for electroless metal deposition. 4,208,255, Cl. 204-72.000.

Stahovic, Robert F. Magnetic piston machine. 4,207,773, Cl. 74-25.000.

Staiger, Gerhard: *See—*
Bronstert, Klaus; Klaerner, Peter; and Staiger, Gerhard, 4,208,497, Cl. 526-138.000.

Stal-Laval Turbin AB: *See—*
Wikstrom, Rolf, 4,208,165, Cl. 415-138.000.

Staley, Edwin H.: *See—*
Coggins, Robert W.; and Staley, Edwin H., 4,208,196, Cl. 55-174.000.

Stamicarbon, B.V.: *See—*
Hirabayashi, Teruhiko; and Wassen, Willem J., 4,208,390, Cl. 423-356.000.

Stampleman, Henry. Article actuated coin dispensing closure for article collecting receptacles. 4,207,973, Cl. 194-4.00F.

Standard-Knapp, Inc.: *See—*
Raudat, John L.; and Rydell, Adam Z., 4,207,721, Cl. 53-248.000.
Raudat, John L., 4,207,722, Cl. 53-248.000.

Standard Oil Company (Indiana): *See—*
Coates, Ronald, 4,208,397, Cl. 423-651.000.
Lee, Richard J., 4,208,340, Cl. 260-396.00R.

Stanfield, John N.: *See—*
Noensie, Nick; Stanfield, John N.; and Pettersen, Paal, 4,208,055, Cl. 277-1.000.

Stannard, Forrest B.; and Highstreet, Edward J., to De Hydro Corporation, The. Filtering apparatus. 4,208,288, Cl. 210-277.000.

Stedman, Robert N., to Caterpillar Tractor Co. Combined lifting mechanism and overhead guard for lift vehicles. 4,207,967, Cl. 187-9.00E.

Steelman, Melvin W.: *See—*
Subera, Elmer J.; and Steelman, Melvin W., 4,207,747, Cl. 62-82.000.

Steffen, Horst: *See—*
Stahl, Fritz; and Steffen, Horst, 4,208,255, Cl. 204-72.000.

Steffey, Ronald E.: *See—*
Beer, Carl C.; and Steffey, Ronald E., 4,207,643, Cl. 15-97.00B.

Steidinger, Donald J., to Wallace Business Forms, Inc. Method for producing a form suitable for airline ticketing. 4,208,066, Cl. 282-11.50A.

Steilen, Ronald M.; and Junge, Steve A., to Deere & Company. Planter. 4,207,823, Cl. 111-85.000.

Stein, Joseph L.; Russell, George A., Jr.; and Mortl, Gunther L., to General Refractories Company. Refractory compositions. 4,208,214, Cl. 106-56.000.

Stekly, Zdenek J. J. Separating chamber for magnetic separator. 4,208,278, Cl. 209-223.00R.

Step, Khaim Y.: *See—*
Belyakov, Viktor P.; Gustov, Vilgelm F.; Step, Khaim Y.; Garin, Vadim A.; Orlov, Valentin K.; Kortikov, Viktor S.; Prokofieva, Nina A.; Terushkina, Anna E.; and Vinogradova, Ljudmila B., 4,208,360, Cl. 261-114.00R.

Stepanov, Gennady P.: *See—*
Svetlov, Sergei A.; Mokin, Valentin S.; Shneiderman, Mark S.; Selnitsyn, Mikhail G.; Lupin, Vladimir A.; Penyaskin, Timofei I.; Stepanov, Gennady P.; Reger, Ivan Y.; and Timkin, Nikolai I., 4,208,040, Cl. 266-121.000.

Stephan, Herbert: *See—*
Aichert, Hans; Dietrich, Walter; Hauff, Alfred; Hoffmann, Otto-Horst; and Stephan, Herbert, 4,208,042, Cl. 266-242.000.

Sterling Drug Inc.: *See—*
Diana, Guy D., 4,208,425, Cl. 424-282.000.
Maxwell, Donald J.; and Crisp, David J., 4,207,982, Cl. 206-534.000.
Michne, William F.; and Lewis, Thomas R., 4,208,523, Cl. 546-97.000.

Stern, Richard M.: *See—*
Scherrer, Robert A.; Hammar, Walton J.; and Stern, Richard M., 4,208,335, Cl. 260-346.220.

Stevens, Barbara E., to Baxter Travenol Laboratories, Inc. Antistatic method and apparatus. 4,208,132, Cl. 366-101.000.

Stevenson, Stanley W. Photo graphic-plane. 4,208,123, Cl. 355-25.000.

Stewart, Donald D.: *See—*
Hedaya, Eddie; Kwiatkowski, George T.; Peters, Edward N.; and Stewart, Donald D., 4,208,492, Cl. 525-389.000.

Stewart, Gary E., to Trade Printers, Inc. Paper processing machine. 4,208,235, Cl. 156-353.000.

Stewart, Roger G.: *See—*
Dingwall, Andrew G. F.; and Stewart, Roger G., 4,208,730, Cl. 365-203.000.

Stice, J. Daniel. Crop drying apparatus utilizing solar energy. 4,207,684, Cl. 34-93.000.

Stickel, Tedd, to Solid State Scientific Inc. Constant current source stabilized semiconductor oscillator. 4,208,639, Cl. 331-116.0FE.

Stockner, Alan R.: *See—*
Alford, Richard R.; and Stockner, Alan R., 4,207,854, Cl. 123-188.00M.

Stoller, Milton, to Mediscan, Inc. Electronic drive system and technique for ultrasonic transducer. 4,207,772, Cl. 73-620.000.

Stoller, Milton, to Mediscan, Inc. Piezoelectric ultrasonic scanning head using a beryllium mirror. 4,208,602, Cl. 310-335.000.

Stone, Robert A., to United Technologies Corporation. High speed shaft flexible coupling with maximum shaft misalignment accommodation capability. 4,207,758, Cl. 64-12.000.

Stoner, Larry W., to General Electric Company. Method and apparatus for dispensing measured quantities of material. 4,207,929, Cl. 141-1.000.

Stork, Willem H. J.: *See—*
Kouwenhoven, Herman W.; and Stork, Willem H. J., 4,208,305, Cl. 252-431.00N.

Strauss, Herbert S.; and Sheinberg, Lawrence, to Duro-Test Corp. High intensity discharge lamp with integral means for arc extinguishing. 4,208,614, Cl. 315-73.000.

Striepeke, Wilhelm: *See—*
Dahlhaus, Peter; Simon, Willi; and Striepeke, Wilhelm, 4,208,011, Cl. 238-281.000.

Stuckey, Raymond L.: *See—*
Prado, Philip G.; Stuckey, Raymond L.; and Volles, Fredrick O., 4,208,079, Cl. 312-202.000.

Stutz, Herbert; Illers, Karl H.; and Schuster, Ludwig, to BASF Aktiengesellschaft. Polyurethane-urea elastomers and their production. 4,208,507, Cl. 528-64.000.

Su, Kai C.: *See—*
Deichert, William G.; Falcetta, Joseph J.; and Su, Kai C., 4,208,362, Cl. 264-1.000.
Deichert, William G.; Su, Kai C.; and vanBuren, Martin F., 4,208,506, Cl. 528-32.000.

Subera, Elmer J.; and Steelman, Melvin W., to Tyler Refrigeration Corporation. Air defrost system using secondary air band components. 4,207,747, Cl. 62-82.000.

Suchanski, Mary R.: *See—*
Lewis, David L.; Schenker, Barry A.; Suchanski, Mary R.; and Franks, C. Richard, deceased, 4,208,450, Cl. 427-126.300.

Suckling, Douglas A. Engine accessory. 4,207,645, Cl. 15-210.00B.

Sudo, Tadamitsu: *See—*
Sawai, Masanobu; Sudo, Tadamitsu; and Enomoto, Shogo, 4,208,185, Cl. 23-230.00B.

Sugasawa, Fukashi; Fukasawa, Noburu; Iizuka, Haruhiko; and Mumura, Akitoshi, to Nissan Motor Company, Limited. I.C. Engine operable in party-cylinder mode. 4,207,856, Cl. 123-198.00F.

Sugawara, Toshiaki: *See—*
Fujita, Masanao; Sugawara, Toshiaki; and Oosaki, Keizo, 4,208,015, Cl. 241-16.000.

Sugimoto, Saisuke: *See—*
Cho, Hideo; Takenoshita, Yukinori; and Sugimoto, Saisuke, 4,208,472, Cl. 428-550.000.

Sullivan, Matthew D., to U.S. Energy Conservation Systems, Inc. Method and system of selective disconnection of loads from a power source. 4,208,593, Cl. 307-35.000.

Sullivan, Robert P.; and Jacobs, Clyde L., to Combustion Engineering, Inc. Mechanism for rotating and reciprocating a soot blower. 4,207,648, Cl. 15-316.00R.

Sumi, Takao: *See—*
Kuniyoshi, Yasunobu; Okada, Takashi; and Sumi, Takao, 4,208,674, Cl. 358-8.000.

Sumitomo Chemical Company, Limited: *See—*
Kondo, Masatsune; and Tanoue, Akira, 4,208,490, Cl. 525-243.000.
Matsuyama, Kiyoshi, 4,208,530, Cl. 528-501.000.

Sumitomo Chemical Industries, Ltd.: *See—*
Yoshida, Masaaki; Watanabe, Masao; Tohma, Kimio; and Noda, Mitsuhiko, 4,208,252, Cl. 202-105.000.

Sumitomo, Yuji: *See—*
Fujimoto, Isao; Kasubuchi, Takeshi; and Sumitomo, Yuji, 4,208,139, Cl. 400-126.000.

Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisan Industry Co., Ltd. Air-fuel ratio control apparatus of a fuel supply system for an internal combustion engine. 4,207,849, Cl. 123-139.0AW.

Sun, Shan C.; and Church, Larry L., to Westinghouse Electric Corp. Protective relay apparatus. 4,208,687, Cl. 361-20.000.

Sundeen, Joseph E.; and Hauck, Frederick P., to E. R. Squibb & Sons, Inc. 4-[2-(2-Substituted phenyl)ethenyl]-N-alkenyl or alkinyl substituted 1,2,3,6-tetrahydropyridines. 4,208,415, Cl. 424-263.000.

Sunouchi, Akio: *See—*
Ito, Fumio; Sunouchi, Akio; Matsuda, Mutsuhide; Suzuki, Ryoichi; Uchiyama, Takashi; and Watanabe, Yoshiaki, 4,208,110, Cl. 354-31.000.

Suntech, Inc.: *See—*
Myers, Harry K., Jr.; and Schneider, Abraham, 4,208,355, Cl. 585-362.000.

Superior Electric Company, The: *See—*
Leenhouts, Albert C., 4,208,623, Cl. 318-696.000.

Superior Industries: *See—*
Hofstatter, Alfred F., 4,208,223, Cl. 148-6.200.

Sutter, Stephen P.: *See—*
Prouty, Myron R.; Nichols, Colin J.; Brown, Norman A.; and Sutter, Stephen P., 4,207,988, Cl. 215-232.000.

Suzuki, Atsushi, to Toyo Ink Manufacturing Co., Ltd. Process for transfer printing at elevated temperatures. 4,208,182, Cl. 8-471.000.

Suzuki, Fumiyoshi; Sasaki, Fumiyoshi; and Nishinomiya, Guen, to Nippon Hoso Kyokai. Moving sound source identifying system. 4,208,735, Cl. 367-136.000.

Suzuki, Kenji: *See*—
Nakayasu, Michiharu; Kumamoto, Kenzo; Suzuki, Kenji; Kuba, Arata; and Kitagawa, Katsushi, 4,208,180, Cl. 431-284.000.
Suzuki, Ryoichi: *See*—
Ito, Fumio; Sunouchi, Akio; Matsuda, Mutsuhide; Suzuki, Ryoichi; Uchiyama, Takashi; and Watanabe, Yoshiaki, 4,208,110, Cl. 354-31.000.
Suzuki, Tadao; and Wachi, Shigeaki A., to Sony Corporation. Switching regulator. 4,208,706, Cl. 363-26.000.
Suzuki, Toshiro, to Hitachi, Ltd.; and Hitachi Denshi Kabushiki Kaisha. Hybrid integrated impedance converter circuit. 4,208,641, Cl. 333-217.000.
Svetlov, Sergei A.; Mokin, Valentin S.; Shneiderman, Mark S.; Selnitsyn, Mikhail G.; Lupin, Vladimir A.; Penyaskin, Timofei I.; Stepanov, Gennady P.; Reger, Ivan Y.; and Timkin, Nikolai I. Apparatus for the gas carburizing of the bore in an object. 4,208,040, Cl. 266-121.000.
Sweda International, Inc.: *See*—
Markkanen, Carl O.; Benson, William G.; and Goldstein, Amnon, 4,208,009, Cl. 235-475.000.
Sweeny, James G.: *See*—
Iacobucci, Guillermo A.; and Sweeny, James G., 4,208,434, Cl. 426-72.000.
Swift, John, to Lambert Howarth & Sons Limited. Machines for the manufacture of footwear. 4,207,824, Cl. 112-49.000.
SWS Silicones Corporation: *See*—
Martin, Eugene R., 4,208,503, Cl. 528-14.000.
Syntex Inc.: *See*—
Pfister, Jurg R., 4,208,423, Cl. 424-274.000.
Syva Company: *See*—
Zuk, Robert F.; and Maggio, Edward T., 4,208,479, Cl. 435-7.000.
Szarka, Laszlo J.; and Eltz, Robert W., to E. R. Squibb & Sons, Inc. Use of phenylalkanes as precursors in benzylpenicillin fermentation. 4,208,481, Cl. 435-43.000.
Sze, Morgan C., to Lummus Company, The. Production of pipeline gas from coal. 4,208,191, Cl. 48-210.000.
Szur, Alex J., to Diamond Shamrock Corporation. Anionic fluorochemical surfactants, process of coating and treated polymeric shapes. 4,208,466, Cl. 428-477.000.
T. A. Pelsue Company: *See*—
Pelsue, Bradley A.; and Beavers, Allan E., 4,207,685, Cl. 34-107.000.
Tadanier, John S.: *See*—
Carney, Ronald E.; Martin, Jerry R.; McAlpine, James B.; and Tadanier, John S., 4,208,407, Cl. 424-180.000.
Tadokuro, Hideo: *See*—
Takata, Yataro; Takenoshita, Yukinori; Sasahara, Kiyoshi; Shigaki, Akira; Hirai, Kazuo; Maeda, Kosei; Tadokuro, Hideo; and Maeda, Hirokazu, 4,207,807, Cl. 92-128.000.
Tagami, Katsutoshi: *See*—
Hazumi, Kenji; Tanaka, Tsutomu; and Tagami, Katsutoshi, 4,208,710, Cl. 363-96.000.
Taguchi, Kazunori. Sound absorbing and diffusing unit, an acoustic screen and a decorative sound absorbing panel. 4,207,964, Cl. 181-284.000.
Tailfer, Roland: *See*—
Muller, Karl-Hans; and Tailfer, Roland, 4,208,213, Cl. 106-10.000.
Taisei Kensetsu Kabushiki Kaisha: *See*—
Hane, Yoshio; and Chino, Nobuo, 4,208,576, Cl. 235-452.000.
Tajima, Fumio: *See*—
Irie, Hiromitsu; Tajima, Fumio; Kuribayashi, Nobuhide; and Isozaki, Kazuhisa, 4,208,298, Cl. 252-301.10W.
Takahashi, Kiyoshi: *See*—
Amikura, Takashi; Kohtani, Yutaka; and Takahashi, Kiyoshi, 4,208,108, Cl. 352-27.000.
Takahashi, Ryoji: *See*—
Noda, Masahiro; and Takahashi, Ryoji, 4,208,695, Cl. 361-181.000.
Takahashi, Shigekazu; and Sawada, Shinji, to Ricoh Watch Co., Ltd. Hand-indication type electronic timepiece. 4,207,732, Cl. 368-76.000.
Takami, Eiichi: *See*—
Matsuo, Tadao; Mashimo, Satoshi; Takami, Eiichi; Mishima, Kyoichi; Namizashi, Hiroshi; Uenoyama, Etsuji; and Kakei, Masanori, 4,208,500, Cl. 526-217.000.
Takata, Yataro; Takenoshita, Yukinori; Sasahara, Kiyoshi; Shigaki, Akira; Hirai, Kazuo; Maeda, Kosei; Tadokuro, Hideo; and Maeda, Hirokazu, to Oiles Industry Co., Ltd. Plastic air cylinder assembly. 4,207,807, Cl. 92-128.000.
Takenaka, Hitoshi, to Nihon Radiator Co., Ltd. Method of manufacturing an aluminum heat exchanger. 4,207,662, Cl. 29-157.30C.
Takenoshita, Yukinori: *See*—
Cho, Hideo; Takenoshita, Yukinori; and Sugimoto, Saisuke, 4,208,472, Cl. 428-550.000.
Takata, Yataro; Takenoshita, Yukinori; Sasahara, Kiyoshi; Shigaki, Akira; Hirai, Kazuo; Maeda, Kosei; Tadokuro, Hideo; and Maeda, Hirokazu, 4,207,807, Cl. 92-128.000.
Takeshita, Isao; Wakamatsu, Nobuhiko; Ando, Eiji; and Tanaka, Hiroyoshi, to Matsushita Electric Industrial Company, Limited. Solar refrigeration system. 4,207,744, Cl. 62-2.000.
Takeuchi, Shinjiro: *See*—
Mitsumoto, Norio; Ichioka, Satoshi; and Takeuchi, Shinjiro, 4,208,254, Cl. 204-43.00T.
Takeuchi, Yuzo: *See*—
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,207,849, Cl. 123-139.0AW.
Tamura, Hiroshi: *See*—
Kuzuwata, Masayuki; Machida, Hazime; Tamura, Hiroshi; and Saito, Tadashi, 4,208,212, Cl. 106-2.000.
Tanaka, Hiroyoshi: *See*—
Takeshita, Isao; Wakamatsu, Nobuhiko; Ando, Eiji; and Tanaka, Hiroyoshi, 4,207,744, Cl. 62-2.000.
Tanaka, Ryuzo: *See*—
Ishigaki, Hisao; and Tanaka, Ryuzo, 4,207,735, Cl. 368-300.000.
Tanaka, Tsutomu: *See*—
Hazumi, Kenji; Tanaka, Tsutomu; and Tagami, Katsutoshi, 4,208,710, Cl. 363-96.000.
Tanoue, Akira: *See*—
Kondo, Masatsune; and Tanoue, Akira, 4,208,490, Cl. 525-243.000.
Tapphorn, Ralph M.: *See*—
Schweitzer, Jeffrey S.; and Tapphorn, Ralph M., 4,208,580, Cl. 250-262.000.
Tardieu, Pierre, to Societe Anonyme Dite: ARTUS. Distributor for electric D.C. machine. 4,208,601, Cl. 310-231.000.
Taricco, Stefano, to Centro Ricerche Fiat S.p.A. Radial compression molding apparatus. 4,208,174, Cl. 425-78.000.
Tashiro, Masaharu: *See*—
Sasaki, Yutaka; Ikeda, Yoneichi; Tashiro, Masaharu; and Nakamura, Toshio, 4,208,303, Cl. 252-417.000.
Tawara, Ikuo: *See*—
Sogi, Shinroku; Yoshinaga, Makoto; Shinohara, Toshio; Aihara, Takayuki; and Tawara, Ikuo, 4,208,484, Cl. 435-286.000.
Tay Textiles Limited: *See*—
Sandeman, Allan M.; and Bell, James D., 4,207,937, Cl. 150-1.000.
Taylor, Derek: *See*—
Davies, Andrew; and Taylor, Derek, 4,208,082, Cl. 339-45.00M.
Taylor, John C. Thermally responsive electric switch. 4,208,646, Cl. 337-372.000.
Taylor, Philip H., to TBA Industrial Products Limited. Asbestos dispersions. 4,208,244, Cl. 162-3.000.
Taylor, William I.: *See*—
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,208,296, Cl. 252-174.110.
TBA Industrial Products Limited: *See*—
Taylor, Philip H., 4,208,244, Cl. 162-3.000.
Teagno, Vladimiro, to AMP Incorporated. Junction boxes. 4,208,080, Cl. 339-18.00B.
Tech-Aid Inc.: *See*—
Schommer, Oliver J., 4,207,813, Cl. 101-4.000.
Tekma Kinomat S.p.A.: *See*—
Camardella, Giuseppe, 4,207,927, Cl. 140-102.000.
Telefonaktiebolaget L M Ericsson: *See*—
Berg, Ake K., 4,208,713, Cl. 364-200.000.
Eklund, Mats F.; Kjoller, Hans O. S.; and Nyman, Anders B. J., 4,208,714, Cl. 364-200.000.
Teletype Corporation: *See*—
Zenner, Walter J., 4,208,545, Cl. 178-22.000.
Tempel, Christel: *See*—
Haberli, Roland; Mollet, Hans; and Tempel, Christel, 4,208,370, Cl. 264-117.000.
Templeton, William B., to Burroughs Corporation. Zero clearance linear bearing apparatus. 4,208,075, Cl. 308-4.00R.
Tenneco Chemicals, Inc.: *See*—
Ceriani, Julius J., 4,207,636, Cl. 5-481.000.
Tepas, Joseph J.: *See*—
Sangster, Arlon G.; Casberg, John M.; and Tepas, Joseph J., 4,208,376, Cl. 422-261.000.
Teraoka, Kazuharu, to Teraoka Seikosho Co., Ltd. Display holding device in electronic digital display type scale. 4,207,955, Cl. 177-25.000.
Teraoka Seikosho Co., Ltd.: *See*—
Teraoka, Kazuharu, 4,207,955, Cl. 177-25.000.
Terchick, Alvin A.: *See*—
Anderson, John C.; Hutchinson, David W.; Terchick, Alvin A.; and Wen, Wu-wey, 4,208,217, Cl. 106-97.000.
Terushkina, Anna E.: *See*—
Belyakov, Viktor P.; Gustov, Vilgelm F.; Step, Khaim Y.; Garin, Vadim A.; Orlov, Valentin K.; Kortikov, Viktor S.; Prokofieva, Nina A.; Terushkina, Anna E.; and Vinogradova, Ljudmila B., 4,208,360, Cl. 261-114.00R.
Teshima, Yasuhiko: *See*—
Kubo, Akira; Todoroki, Nobuaki; Teshima, Yasuhiko; Kuranami, Nobuo; Tsutsui, Nobukazu; and Kasai, Akio, 4,208,262, Cl. 204-181.00T.
Texaco Development Corp.: *See*—
Naylor, Carter G., 4,208,280, Cl. 210-22.00R.
Texaco Inc.: *See*—
Hall, Wilbur L.; French, Charles R.; Wu, Ching H.; and Brown, Alfred, 4,207,945, Cl. 166-272.000.
Haltmar, Warren C.; and Lacey, Elsa S., 4,207,946, Cl. 166-274.000.
Texas Instruments Incorporated: *See*—
Cooper, Erwin E.; and McKenney, Samuel R., 4,208,087, Cl. 350-16.000.
Harrison, Herman W., 4,208,720, Cl. 364-709.000.
McElroy, David J., 4,208,726, Cl. 365-104.000.
Redwine, Donald J.; and Rao, G. R. Mohan, 4,208,727, Cl. 365-105.000.
Thagard Technology Company: *See*—
Matovich, Edwin, 4,208,373, Cl. 422-129.000.

Thomas J. Lipton, Inc.: *See*—
Visser, Johannes; Oosthoek, Raoul H. J.; Groeneweg, Jan W.; and Dijkstra, Hendrik, 4,208,436, Cl. 426-104.000.
Thompson, David E.; Anderson, Dean B.; August, Rudolf R.; and Yao, Shi-kay, to Rockwell International Corporation. Interferometer gyro using heterodyne phase detection without severe light source coherence requirements. 4,208,128, Cl. 356-350.000.
Thompson, John H.; and Douglas, George R., to Westinghouse Electric Corp. Low frequency inertia balanced dipole hydrophone. 4,208,737, Cl. 367-171.000.
Thompson, Larry F.: *See*—
Bowden, Murrae J. S.; Felt, Eugene D.; Thompson, Larry F.; and Wilkins, Cletus W., Jr., 4,208,211, Cl. 430-314.000.
Thorn, Gernot: *See*—
Schwiecker, Horst; Thorn, Gernot; and Ehrl, Hans-Peter, 4,207,835, Cl. 118-664.000.
Thyssen Aktiengesellschaft vormals August Thyssen-Hutte: *See*—
Hoffken, Erich; Kleine-Kleffmann, Werner; Bertram, Rolf; Abele, Karl-Heinz; and Michalski, Gunter, 4,208,039, Cl. 266-50.000.
Tiitinen, Heikki A.: *See*—
Hamalainen, Matti J.; Rastas, Jussi K.; Tiitinen, Heikki A.; and Niemi, Tom O., 4,208,380, Cl. 423-143.000.
Timkin, Nikolai I.: *See*—
Svetlov, Sergei A.; Mokin, Valentin S.; Shneiderman, Mark S.; Selnitsyn, Mikhail G.; Lupin, Vladimir A.; Penyaskin, Timofei I.; Stepanov, Gennady P.; Reger, Ivan Y.; and Timkin, Nikolai I., 4,208,040, Cl. 266-121.000.
Timpe, Ursula H., executrix: *See*—
Watkins, John J.; and Timpe, Winfried G., deceased, 4,208,245, Cl. 162-31.000.
Timpe, Winfried G., deceased: *See*—
Watkins, John J.; and Timpe, Winfried G., deceased, 4,208,245, Cl. 162-31.000.
Tioxide Group Limited: *See*—
LeBel, Gratian, 4,208,393, Cl. 423-555.000.
Tobler, Hans; Fory, Werner; and Schurter, Rolf, to Ciba-Geigy Corporation. N-Phenyl-substituted N-heterocyclic compounds, their preparation and use in agents for regulating plant growth. 4,208,202, Cl. 71-88.000.
Tocco, Charles T. Muzzle brake. 4,207,799, Cl. 89-196.000.
Todoroki, Nobuaki; and Yasukawa, Junichi, to Shinto Paint Co., Ltd. Continuous method for cathodic electrodeposition. 4,208,261, Cl. 204-181.00C.
Todoroki, Nobuaki: *See*—
Kubo, Akira; Todoroki, Nobuaki; Teshima, Yasuhiko; Kuranami, Nobuo; Tsutsui, Nobukazu; and Kasai, Akio, 4,208,262, Cl. 204-181.00T.
Toedtli, Sergej, to Georg Fischer AG. Blade structure for centrifugal wheel. 4,207,712, Cl. 51-434.000.
Toelke, Lester, to Well Control, Inc. Tension shock absorber device. 4,207,756, Cl. 64-23.000.
Tohma, Kimio: *See*—
Yoshida, Masaaki; Watanabe, Masao; Tohma, Kimio; and Noda, Mitsuhiko, 4,208,252, Cl. 202-105.000.
Tojyo, Tsutomu, to Olympus Optical Co., Ltd. Microscope objective lens system. 4,208,099, Cl. 350-175.0ML.
Tokico Ltd.: *See*—
Shimizu, Fumio, 4,207,970, Cl. 188-71.900.
Toko Tokushu Densen Kabushiki Kaisha: *See*—
Endo, Shin, 4,208,542, Cl. 174-113.00C.
Tokyo Design Kogei Co., Ltd.: *See*—
Akiyama, Mineo, 4,207,704, Cl. 46-232.000.
Tokyo Ohka Kogyo Kabushiki Kaisha: *See*—
Uehara, Akira; and Nakane, Hisashi, 4,208,159, Cl. 414-225.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Irie, Hiromitsu; Tajima, Fumio; Kuribayashi, Nobuhide; and Isozaki, Kazuhisa, 4,208,298, Cl. 252-301.10W.
Tokyo Shibaura Electric Co., Ltd.: *See*—
Kumahara, Mitsuo; and Ishii, Takatoshi, 4,208,715, Cl. 364-200.000.
Oikawa, Mitsuhiro; and Matsuura, Susumu, 4,208,299, Cl. 252-301.60S.
Watanabe, Minoru; Nishimura, Toshio; Omi, Tadao; Koomoto, Kotaro; Kobuya, Tomohiko; and Shimizu, Kenichi, 4,208,611, Cl. 313-487.000.
Tolasch, Gerhard; Schubert, Bernhard; and Menge, Gunter, to Hauni-Werke Korber & Co., KG. Apparatus for filling chargers with cigarettes or the like. 4,207,720, Cl. 53-151.000.
Tolgyesi, Eva: *See*—
Bresak, Ann F.; and Tolgyesi, Eva, 4,208,471, Cl. 428-447.000.
Tomlinson, Walter J., III; and Wagner, Richard E., to Bell Telephone Laboratories, Incorporated. Optical switch. 4,208,094, Cl. 350-96.200.
Tomson, James M., to General Electric Company. Methods and apparatus for use in dispensing dynamoelectric machine lubricant material. 4,207,930, Cl. 141-1.000.
Tomson, James M.; and Bohde, Richard C., to General Electric Company. Methods and apparatus for dispensing dynamoelectric machine lubricant material. 4,207,931, Cl. 141-1.000.
Toshiba Engineering Kabushiki Kaisha: *See*—
Irie, Hiromitsu; Tajima, Fumio; Kuribayashi, Nobuhide; and Isozaki, Kazuhisa, 4,208,298, Cl. 252-301.10W.
Tourenq, Lucienne: *See*—
Bore, Pierre; and Tourenq, Lucienne, 4,208,402, Cl. 424-70.000.
Tournier, Herve N.: *See*—
Groult, Alain M. M.; Tournier, Herve N.; and Fayet, Philippe, 4,208,505, Cl. 528-30.000.
Toyo Ink Manufacturing Co., Ltd.: *See*—
Suzuki, Atsushi, 4,208,182, Cl. 8-471.000.
Toyo Soda Manufacturing Company, Limited: *See*—
Hiraga, Yoichi; and Kikuchi, Mitsuo, 4,208,389, Cl. 423-321.00S.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Hattori, Tadashi; Kobashi, Mamoru; Kawase, Tooro; and Ueno, Yoshiki, 4,207,847, Cl. 123-117.00R.
Hori, Ryuzo; Uchida, Kiyoshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; and Wakisaka, Hiroshi, 4,208,265, Cl. 204-195.00S.
Ishikawa, Masakazu; Oka, Hiroyuki; Shibatani, Juichi; and Obu, Yuichiro, 4,207,971, Cl. 188-218.00A.
Miyagi, Hideo, 4,207,737, Cl. 60-276.000.
Onuma, Kiyoshi, 4,207,757, Cl. 64-17.00R.
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,207,849, Cl. 123-139.0AW.
Trade Printers, Inc.: *See*—
Stewart, Gary E., 4,208,235, Cl. 156-353.000.
Trapp, Lothar; and Conradi, Rudolf, to Carl Zeiss-Stiftung. Immersion objective for a microscope. 4,208,101, Cl. 350-175.0ML.
Trethewy, Brian R., to Boeing Company, The. Apparatus for dispensing rivets and similar articles. 4,208,153, Cl. 406-72.000.
Tri Tool, Inc.: *See*—
Astle, William H.; and Pertle, John E., 4,207,786, Cl. 82-4.00C.
Troxell, Truxton B.: *See*—
Safadago, Gary J.; and Troxell, Truxton B., 4,207,879, Cl. 128-70.000.
TRW Inc.: *See*—
Arnush, Donald; MacKenzie, Kenneth R.; and Wuerker, Ralph F., 4,208,582, Cl. 250-291.000.
Kirby, Edward, 4,208,083, Cl. 339-97.00P.
Tsao, Ter-Fung, to Quaker Oats Company, The. Steam injection extrusion apparatus, process, and the resultant product. 4,208,476, Cl. 426-549.000.
Tseng, Ching Y.: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,208,297, Cl. 252-174.110.
Tsfasman, Grigory M.: *See*—
Olshvang, Mikhail V.; Tsfasman, Grigory M.; and Sheremet, Alexei A., 4,208,707, Cl. 363-35.000.
Tsubouchi, Kuniyoshi: *See*—
Yasugahira, Norio; Sato, Takeshi; and Tsubouchi, Kuniyoshi, 4,208,167, Cl. 415-217.000.
Tsutsui, Nobukazu: *See*—
Kubo, Akira; Todoroki, Nobuaki; Teshima, Yasuhiko; Kuranami, Nobuo; Tsutsui, Nobukazu; and Kasai, Akio, 4,208,262, Cl. 204-181.00T.
Tucker, James W.; and Peck, Robert A., to General Electric Company. Blade retainer. 4,208,170, Cl. 416-221.000.
Tueta, Roger J.: *See*—
Canteloup, Jean; Mocellin, Alain M.; Braguier, Michel A.; and Tueta, Roger J., 4,207,834, Cl. 118-620.000.
Turk, Gunter: *See*—
Nauroth, Peter; Esch, Heinz; Kuhlmann, Robert; Bode, Rudolf; Reisert, Arthur; Buhler, Harald; and Turk, Gunter, 4,208,316, Cl. 260-37.0SB.
Turk, Herbert; Honigmann, Gunter; Martens, Gerhard; and Schewe, Lothar, to Barmag Barmer Maschinenfabrik AG. Inductively heated godet. 4,208,560, Cl. 219-10.49R.
Turkowski, Lukasz: *See*—
Ostrowski, Jerzy; Sierputowski, Piotr; Turkowski, Lukasz; Jablkiewicz, Jerzy; Pacholski, Jan; and Jedryka, Tadeusz, 4,207,728, Cl. 57-58.890.
Turner, Norman J., to Actrol Industries Pty. Ltd. Energy regulator. 4,208,644, Cl. 337-102.000.
Tuss, John J.: *See*—
Bell, Frederick K.; and Tuss, John J., 4,207,680, Cl. 33-174.00R.
Tyler Refrigeration Corporation: *See*—
Subera, Elmer J.; and Steelman, Melvin W., 4,207,747, Cl. 62-82.000.
Ube Industries, Ltd.: *See*—
Nakayasu, Michiharu; Kumamoto, Kenzo; Suzuki, Kenji; Kuba, Arata; and Kitagawa, Katsushi, 4,208,180, Cl. 431-284.000.
Uchida, Kiyoshi: *See*—
Hori, Ryuzo; Uchida, Kiyoshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; and Wakisaka, Hiroshi, 4,208,265, Cl. 204-195.00S.
Uchiyama, Takashi: *See*—
Ito, Fumio; Sunouchi, Akio; Matsuda, Mutsuhide; Suzuki, Ryoichi; Uchiyama, Takashi; and Watanabe, Yoshiaki, 4,208,110, Cl. 354-31.000.
Uehara, Akira; and Nakane, Hisashi, to Tokyo Ohka Kogyo Kabushiki Kaisha. Apparatus for the treatment of a wafer by plasma reaction. 4,208,159, Cl. 414-225.000.
Ueno, Yoshiki: *See*—
Hattori, Tadashi; Kobashi, Mamoru; Kawase, Tooro; and Ueno, Yoshiki, 4,207,847, Cl. 123-117.00R.
Uenoyama, Etsuji: *See*—
Matsuo, Tadao; Mashimo, Satoshi; Takami, Eiichi; Mishima, Kyoichi; Namizashi, Hiroshi; Uenoyama, Etsuji; and Kakei, Masanori, 4,208,500, Cl. 526-217.000.
Umetsu, Junji: *See*—
Urano, Fumio; and Umetsu, Junji, 4,208,118, Cl. 354-288.000.

Union Carbide Corporation: *See—*
Death, Frank S., 4,208,206, Cl. 75-60.000.
Hedaya, Eddie; Kwiatkowski, George T.; Peters, Edward N.; and Stewart, Donald D., 4,208,492, Cl. 525-389.000.
Priest, David C.; and Langdale-Smith, Richard A., 4,208,314, Cl. 260-33.20R.
United Merchants and Manufacturers, Inc.: *See—*
Gregorian, Razmic S.; and Namboodri, Chettoor G., 4,208,173, Cl. 427-296.000.
U.S. Energy Conservation Systems, Inc.: *See—*
Sullivan, Matthew D., 4,208,593, Cl. 307-35.000.
United States of America
Air Force: *See—*
Oloff, Clarence M.; Buehring, Willi J.; and Greenlees, Kevin J., 4,207,889, Cl. 128-213.00R.
Spencer, Donald J., 4,208,129, Cl. 356-425.000.
Wallace, Richard S., 4,207,764, Cl. 73-147.000.
Williams, David W., 4,208,729, Cl. 365-184.000.
Army: *See—*
Bloomer, Thomas M., 4,207,841, Cl. 102-214.000.
Chang, Leroy L.; Esaki, Leo; and Sai-Halasz, George A., 4,208,667, Cl. 357-16.000.
Merritt, James A., 4,208,638, Cl. 331-94.50G.
Reed, Jerry A.; Van Delden, Ronald; Waring, Winfred F.; and Maruko, Shuji U., 4,207,795, Cl. 89-1.813.
Energy: *See—*
Horwitz, E. Philip; and Mason, George W., 4,208,377, Cl. 423-8.000.
Interior: *See—*
Gomes, John M.; O'Keefe, Daniel A.; and McAlexander, Richard M., 4,208,275, Cl. 209-167.000.
Heinen, Harold J.; Peterson, David G.; and Lindstrom, Roald E., 4,208,378, Cl. 423-27.000.
Khalafalla, Sanaa E.; Reimers, George W.; and Rholl, Stephen A., 4,208,294, Cl. 252-62.520.
Pahlman, John E.; and Khalafalla, Sanaa E., 4,208,379, Cl. 423-49.000.
Navy: *See—*
Derderian, George; Mohon, Windell N.; Maldonato, Eugene D.; and Rodemann, Alfred H., 4,207,688, Cl. 35-12.00N.
Geren, Keith E., 4,207,819, Cl. 102-18.0MS.
Oharek, Frank J., 4,208,107, Cl. 351-7.000.
Warnock, Frederick E., 4,207,796, Cl. 89-28.00R.
U.S. Philips Corporation: *See—*
Allezard, Roland, 4,208,659, Cl. 343-14.000.
Couwenberg, Winston D., 4,208,604, Cl. 313-113.000.
Hokkeling, Pieter; and Van den Plas, Roger J. Q., 4,208,607, Cl. 313-332.000.
Hunzinger, Jean-Jacques; and Hily, Claude, 4,208,088, Cl. 350-31.000.
Knippenberg, Wilhelmus F.; Verspui, Gerrit; and Hagen, Siegfried H., 4,208,449, Cl. 427-101.000.
Moerkens, Jozef C., 4,208,616, Cl. 315-106.000.
Peek, Johannes B. H.; and Schmidt, Johan M., 4,208,634, Cl. 330-149.000.
Roelevink, Bauke J.; and Gelens, Johannes R., 4,208,700, Cl. 362-10.000.
Schayes, Raymond G. G.; and Gustin, Pol A. G. J., 4,208,677, Cl. 358-280.000.
van der Meijs, Antonius A. E. J., 4,208,640, Cl. 333-18.000.
van Esdonk, Johannes; and Haans, Petrus F. A., 4,207,656, Cl. 29-25.140.
Vogler, Gerd; and Mester, Heinz, 4,208,584, Cl. 250-402.000.
United States Steel Corporation: *See—*
Anderson, John C.; Hutchinson, David W.; Terchick, Alvin A.; and Wen, Wu-wey, 4,208,217, Cl. 106-97.000.
United Technologies Corporation: *See—*
Barlow, Melvin C.; Loersch, Joseph F.; and Basche, Malcolm, deceased, 4,208,222, Cl. 148-6.000.
Cheo, Peter K.; and Gilden, Meyer, 4,208,091, Cl. 350-96.130.
McFarlin, David J., 4,207,746, Cl. 62-55.500.
Stone, Robert A., 4,207,758, Cl. 64-12.000.
University of Pittsburgh, The: *See—*
Karol, Meryl H.; and Alarie, Yves C., 4,208,399, Cl. 424-1.000.
University of Southern California: *See—*
Netto, Daniel J., 4,208,089, Cl. 350-46.000.
University of Toledo, The: *See—*
Lee, Harold H., 4,208,483, Cl. 435-284.000.
Untz, Robert W., to Caterpillar Tractor Co. Core apparatus. 4,208,029, Cl. 249-183.000.
UOP Inc.: *See—*
Quigley, William A.; and Sorenson, Paul H., 4,208,192, Cl. 55-5.000.
Uozumi, Junzo: *See—*
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,207,849, Cl. 123-139.0AW.
Upjohn Company, The: *See—*
Kelly, Robert C., 4,208,512, Cl. 542-426.000.
Nelson, Norman A., 4,208,538, Cl. 568-807.000.
Nelson, Stephen J., 4,208,409, Cl. 424-209.000.
Robert, Andre, 4,208,427, Cl. 424-285.000.
Urano, Fumio; and Umetsu, Junji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Moisture and dust proof sealing arrangement for camera body rear cover. 4,208,118, Cl. 354-288.000.
Urbano, Nino: *See—*
Scremin, Gerard; and Urbano, Nino, 4,207,934, Cl. 141-383.000.
Ury, Michael G.: *See—*
Eastlund, Bernard J.; Wood, Charles H.; Couch, Robert W.; and Ury, Michael G., 4,208,587, Cl. 250-492.00R.
Ushijima, Takashi; Iwasa, Yoshio; and Horiuchi, Tomofusa, to Nissan Motor Company, Limited. Automobile with altitude compensated fuel feed means. 4,208,361, Cl. 261-121.00B.
Uzan, Andre V., to Pharmindustrie. Indole derivatives and their use as anxiolytics. 4,208,417, Cl. 424-267.000.
Valco Cincinnati, Inc.: *See—*
Santefort, Richard A., 4,208,236, Cl. 156-356.000.
Valmet Corporation: *See—*
Haltof, Garry P., 4,208,575, Cl. 235-380.000.
vanBuren, Martin F.: *See—*
Deichert, William G.; Su, Kai C.; and vanBuren, Martin F., 4,208,506, Cl. 528-32.000.
van Dalen, Dirk J.: *See—*
Bayorgeon, Jeffrey T.; van Dalen, Dirk J.; and Legrand, Pierre N., 4,207,681, Cl. 33-180.0AT.
Van Delden, Ronald: *See—*
Reed, Jerry A.; Van Delden, Ronald; Waring, Winfred F.; and Maruko, Shuji U., 4,207,795, Cl. 89-1.813.
Van den Plas, Roger J. Q.: *See—*
Hokkeling, Pieter; and Van den Plas, Roger J. Q., 4,208,607, Cl. 313-332.000.
van der Lely, Cornelis. Soil cultivating implements. 4,207,948, Cl. 172-59.000.
van der Meijs, Antonius A. E. J., to U.S. Philips Corporation. Attenuation equalizer for correcting a temperature and frequency-dependent cable attenuation. 4,208,640, Cl. 333-18.000.
Vanderpool, Clarence D., to GTE Service Corporation. Coated phosphors and articles employing same. 4,208,461, Cl. 428-207.000.
van Esdonk, Johannes; and Haans, Petrus F. A., to U.S. Philips Corporation. Color television display tube and method of manufacturing same. 4,207,656, Cl. 29-25.140.
van Haaften, Henry M. T. Operating station for a duct system through which a plug body is pumped. 4,207,911, Cl. 137-119.000.
van Loo, Pieter J. Rotary piston machine. 4,207,736, Cl. 60-39.340.
Van Natta, Terry L. Plow. 4,207,952, Cl. 172-754.000.
Varani, Frederick T., to Bio-Gas of Colorado, Inc. Method and apparatus for processing animal waste. 4,208,279, Cl. 210-12.000.
Varitrac AG: *See—*
Horowitz, Alexandre; Heerema, Pieter S.; and Willemsen, Henricus P., 4,207,828, Cl. 114-125.000.
VDO Adolf Schindling AG: *See—*
Henss, Heinrich, 4,207,768, Cl. 73-431.000.
Veith, Bernd: *See—*
Vogt, Alfred; Veith, Bernd; and Ruttiger, Anton, 4,208,654, Cl. 340-351.000.
Velte, Andre J.: *See—*
Delebecque, Robert P.; Goupil, Georges A.; and Velte, Andre J., 4,208,619, Cl. 318-4.000.
Verkerke, Paul E.: *See—*
Yakimowich, Peter; and Verkerke, Paul E., 4,208,197, Cl. 55-315.000.
Veron, Andre: *See—*
Bimond, Jean-Pierre; Etcheverria, Jean-Michel; Lazarre, Flavien; and Veron, Andre, 4,207,806, Cl. 92-31.000.
Verspui, Gerrit: *See—*
Knippenberg, Wilhelmus F.; Verspui, Gerrit; and Hagen, Siegfried H., 4,208,449, Cl. 427-101.000.
Vetter, Hermann: *See—*
Borst, Wolfgang; Klotzner, Winfried; Pagel, Ernst-Olav; and Vetter, Hermann, 4,207,846, Cl. 123-117.00D.
Viall, Charles S., Jr.: *See—*
Viall, Charles S., Sr.; Viall, Charles S., Jr.; and Viall, Harold S., 4,207,958, Cl. 180-271.000.
Viall, Charles S., Sr.; Viall, Charles S., Jr.; and Viall, Harold S. Vehicle safety braking system. 4,207,958, Cl. 180-271.000.
Viall, Harold S.: *See—*
Viall, Charles S., Sr.; Viall, Charles S., Jr.; and Viall, Harold S., 4,207,958, Cl. 180-271.000.
Vicon Products Corp.: *See—*
Scrivo, Leonard; Binner, Paul; and Weinstein, Louis, 4,208,579, Cl. 250-227.000.
Victor Company of Japan, Ltd.: *See—*
Ozawa, Keiji; and Kinjo, Hisao, 4,208,671, Cl. 358-4.000.
Victoreen, Inc.: *See—*
Rudin, Stephen, 4,208,588, Cl. 250-496.000.
Viennet, Rene: *See—*
Gharadjedaghi, Fereydoun; Ruedin, Yves; and Viennet, Rene, 4,207,671, Cl. 29-592.00R.
Vinals, Joaquin: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,208,297, Cl. 252-174.110.
Vinals, Joaquin F.: *See—*
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,208,308, Cl. 252-522.00R.
Withycombe, Donald A.; Mookherjee, Braja D.; Vock, Manfred H.; and Vinals, Joaquin F., 4,207,905, Cl. 131-17.00R.

Vinogradova, Ljudmila B.: *See*—
Belyakov, Viktor P.; Gustov, Vilgelm F.; Step, Khaim Y.; Garin, Vadim A.; Orlov, Valentin K.; Kortikov, Viktor S.; Prokofieva, Nina A.; Terushkina, Anna E.; and Vinogradova, Ljudmila B., 4,208,360, Cl. 261-114.00R.

Visser, Johannes; Oosthoek, Raoul H. J.; Groeneweg, Jan W.; and Dijkstra, Hendrik, to Thomas J. Lipton, Inc. Meat analogues containing dry spun protein fibers. 4,208,436, Cl. 426-104.000.

Vita Zahnfabrik H. Rauter KG: *See*—
Risse, Bernd, 4,208,573, Cl. 219-411.000.

Vivant, Gilbert: *See*—
Cerny, Jacqueline; and Vivant, Gilbert, 4,208,317, Cl. 260-38.000.

Vock, Manfred H.: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,208,297, Cl. 252-174.110.

Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,208,308, Cl. 252-522.00R.

Withycombe, Donald A.; Mookherjee, Braja D.; Vock, Manfred H.; and Vinals, Joaquin F., 4,207,905, Cl. 131-17.00R.

Vogler, Alfred: *See*—
Kisters, Theodor; and Vogler, Alfred, 4,208,383, Cl. 423-215.500.

Vogler, Gerd; and Mester, Heinz, to U.S. Philips Corporation. Circuit arrangement for an X-ray generator. 4,208,584, Cl. 250-402.000.

Vogt, Alfred; Veith, Bernd; and Ruttiger, Anton, to Preh, Electrofeinmechanische Werke, Jakob Preh Nachf GmbH & Co. Remote control transmitter. 4,208,654, Cl. 340-351.000.

Vogt, Henning, to Leybold-Heraeus GmbH. Apparatus for focusing electromagnetic radiation on a sample. 4,208,585, Cl. 250-423.00P.

Vokurka, Vaclav J. Antenna with two orthogonally disposed parabolic cylindrical reflectors. 4,208,661, Cl. 343-781.00P.

Volke, Hans-Werner; and Hilkenmeier, Juergen, to Nixdorf Computer AG. Dot matrix printer head. 4,208,138, Cl. 400-124.000.

Volles, Fredrick O.: *See*—
Prado, Philip G.; Stuckey, Raymond L.; and Volles, Fredrick O., 4,208,079, Cl. 312-202.000.

Vsesojuzny Elektrotekhnichesky Institut Imeni V. I. Lenina: *See*—
Olshvang, Mikhail V.; Tsfasman, Grigory M.; and Sheremet, Alexei A., 4,208,707, Cl. 363-35.000.

W-K-M Wellhead Systems, Inc.: *See*—
Peters, Clifford M., 4,207,924, Cl. 137-625.660.

W. M. Still & Sons Limited: *See*—
Hayes, Cecil, 4,207,916, Cl. 137-171.000.

WABCO Westinghouse GmbH: *See*—
Gottling, Helmut, 4,207,803, Cl. 91-410.000.
Opel, Detlef; and Moller, Rudolf, 4,207,917, Cl. 137-269.000.

Wachi, Shigeaki A.: *See*—
Suzuki, Tadao; and Wachi, Shigeaki A., 4,208,706, Cl. 363-26.000.

Wacker-Chemie GmbH: *See*—
August, Peter; Huber, Peter; Adler, Klaus; and Dressler, Wilfried, 4,208,319, Cl. 260-42.390.
Hockemeyer, Friedrich; Hechtl, Wolfgang; Marwitz, Heinrich; and Hittmair, Paul, 4,208,504, Cl. 528-15.000.

Wada, Takeshi; Kita, Hisanao; Okuni, Tetsuo; and Namatame, Yoshio, deceased (by Namatame, Akemi, administratrix), to Hitachi, Ltd. Nozzle structure of electroslag welding machines. 4,208,564, Cl. 219-73.100.

Wade, Peter C.; and Kissick, Thomas P., to E. R. Squibb & Sons, Inc. Substituted hydrazino derivatives of benzisothiazole-1,1-dioxides. 4,208,518, Cl. 544-62.000.

Wagner, Norman J., to Calgon Corporation. Method of preparing activated carbon for flow in a vacuum. 4,208,232, Cl. 156-276.000.

Wagner, Richard E.: *See*—
Tomlinson, Walter J., III; and Wagner, Richard E., 4,208,094, Cl. 350-96.200.

Wagner, Ronald A.: *See*—
Sheldon, Edward J.; Brown, William C., Jr.; Shovlin, Thomas D.; and Wagner, Ronald A., 4,208,632, Cl. 328-117.000.

Wagner, Rudolf, to REMS-WERK Christian Foll und Sohne GmbH & Co. Separating device for bar and pipe-shaped workpieces. 4,207,657, Cl. 29-33.00T.

Wakamatsu, Nobuhiko: *See*—
Takeshita, Isao; Wakamatsu, Nobuhiko; Ando, Eiji; and Tanaka, Hiroyoshi, 4,207,744, Cl. 62-2.000.

Wakisaka, Hiroshi: *See*—
Hori, Ryuzo; Uchida, Kiyoshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; and Wakisaka, Hiroshi, 4,208,265, Cl. 204-195.00S.

Wald, Herbert; Young, Harold K.; and Meadows, Lacy C., to Bethlehem Steel Corporation. Apparatus for one side coating of a continuous strip. 4,207,831, Cl. 118-63.000.

Wall, John R. Fencing wire dispenser. 4,208,021, Cl. 242-86.50R.

Wallace Business Forms, Inc.: *See*—
Steidinger, Donald J., 4,208,066, Cl. 282-11.50A.

Wallace, Richard S., to United States of America, Air Force. Precision fin indexing device for wind tunnel models. 4,207,764, Cl. 73-147.000.

Wallrabenstein, Michael; Behnke, Joachim; and Brodowski, Walter, to Akzona Incorporated. Process for the preparation of polyterephthaloyl-and polydiphenyl ether-4,4-dicarboxylic acid oxalamidrazone. 4,208,509, Cl. 528-207.000.

Walter, Robert A.: *See*—
Fischer, George A.; Walter, Robert A.; and Melilli, Albert S., 4,207,864, Cl. 126-285.00R.

Walz, Gerd: *See*—
Kraft, Kurt; Walz, Gerd; and Wirth, Thaddaus, 4,208,488, Cl. 525-107.000.

Wang, Samuel S.; Smith, Eugene L., Jr.; and Huliganga, Ernie F., to American Cyanamid Company. Novel frother composition for beneficiation of mineral ores. 4,208,487, Cl. 521-117.000.

Wang, Shih-Ping, to Diagnostic Information, Inc. X-ray tube having scintillator-photocathode segments aligned with phosphor segments of its display screen. 4,208,577, Cl. 250-213.0VT.

Wanger, Robert P., to General Electric Company. Magnetic parallel-to-serial converter for gas turbine engine parameter sensor. 4,208,550, Cl. 370-113.000.

Wankel, Felix. Water foil. 4,207,830, Cl. 114-274.000.

Wanner, Karl; Schmid, Wolfgang; and Holzel, Martin, to Robert Bosch GmbH. Shaft seal. 4,208,058, Cl. 277-153.000.

Wanner, Karl: *See*—
Reibetanz, Wilbert; Sigg, Horst; Wiesner, Herbert; Wanner, Karl; Hansel, Gernot; Seitz, Karl; and Bleicher, Manfred, 4,207,953, Cl. 175-209.000.

Waring, Winfred F.: *See*—
Reed, Jerry A.; Van Delden, Ronald; Waring, Winfred F.; and Maruko, Shuji U., 4,207,795, Cl. 89-1.813.

Warner-Lambert Company: *See*—
Herrmann, Wolfgang; and Satzinger, Gerhard, 4,208,526, Cl. 546-209.000.

Warner & Swasey Company, The: *See*—
Fournier, Roger H., 4,207,710, Cl. 51-237.0CS.

Warnock, Frederick E., to United States of America, Navy. Ordnance induction firing system. 4,207,796, Cl. 89-28.00R.

Wassen, Willem J.: *See*—
Hirabayashi, Teruhiko; and Wassen, Willem J., 4,208,390, Cl. 423-356.000.

Watanabe, Masanori: *See*—
Kitai, Kiyoshi; Morino, Yukio; Kato, Shogo; and Watanabe, Masanori, 4,208,111, Cl. 354-33.000.

Watanabe, Masao: *See*—
Yoshida, Masaaki; Watanabe, Masao; Tohma, Kimio; and Noda, Mitsuhiko, 4,208,252, Cl. 202-105.000.

Watanabe, Minoru; Nishimura, Toshio; Omi, Tadao; Koomoto, Kotaro; Kobuya, Tomohiko; and Shimizu, Kenichi, to Tokyo Shibaura Electric Co., Ltd. Fluorescent lamp containing a green emitting rare earth silicate coactivated phosphor. 4,208,611, Cl. 313-487.000.

Watanabe, Seiichi, to Kabushiki Kaisha Tokyo Kikai Seisakusho. Rotary press with means for adjusting the positions of printing plates on plate cylinders. 4,207,815, Cl. 101-248.000.

Watanabe, Yoshiaki: *See*—
Ito, Fumio; Sunouchi, Akio; Matsuda, Mutsuhide; Suzuki, Ryoichi; Uchiyama, Takashi; and Watanabe, Yoshiaki, 4,208,110, Cl. 354-31.000.

Watkins, John J.; and Timpe, Winfried G., deceased (by Timpe, Ursula H., executrix), to St. Regis Paper Company. Pyrolysis of spent pulping liquors. 4,208,245, Cl. 162-31.000.

Watson, Peter G., to Riker Laboratories, Inc. Process for the preparation of 2-[N-(2-hydroxyethyl)-N-lower alkylaminomethyl]benzhydrols. 4,208,349, Cl. 260-570.00R.

Way, Terrance: *See*—
Reed, James R.; Way, Terrance; and Leal, Richard A., 4,208,454, Cl. 427-238.000.

Webb, John C.: *See*—
Romera-Sierra, Cesar; and Webb, John C., 4,207,689, Cl. 35-20.000.

Webster, Dennis E.; and Rouse, Ian M., to Johnson, Matthey & Co., Limited. Production of formaldehyde. 4,208,353, Cl. 568-472.000.

Weible, Warren W., to Zeller Corporation, The. Universal joint for transmitting torque from one shaft to another. 4,207,755, Cl. 64-15.00B.

Weiler, Gerhard H.; and Pagels, Louis T., to Automatic Liquid Packaging, Inc. Hermetically sealed container with plural access ports. 4,207,990, Cl. 220-267.000.

Weinstein, Louis: *See*—
Scrivo, Leonard; Binner, Paul; and Weinstein, Louis, 4,208,579, Cl. 250-227.000.

Weiss, Jay I.: *See*—
Berwick, Leonard J.; Weiss, Jay I.; and Besden, Norman M., 4,208,676, Cl. 358-237.000.

Weil Control, Inc.: *See*—
Toelke, Lester, 4,207,756, Cl. 64-23.000.

Wen, Wu-wey: *See*—
Anderson, John C.; Hutchinson, David W.; Terchick, Alvin A.; and Wen, Wu-wey, 4,208,217, Cl. 106-97.000.

Werner & Pfleiderer: *See*—
Schafer, Manfred, 4,208,574, Cl. 219-539.000.

Westberg, Walter M.: *See*—
Lindsay, Thomas W.; and Westberg, Walter M., 4,208,696, Cl. 361-212.000.

Westerhoff, Heinz. Swivel assembly for interconnecting two relatively movable conduits. 4,207,920, Cl. 137-615.000.

Westerman, David J.: *See*—
Lotz, Robert W.; and Westerman, David J., 4,208,719, Cl. 364-515.000.

Western Electric Company, Inc.: *See*—
Carlos, Mark F.; Jon, Min-Chung; and Palazzo, Vito, 4,207,771, Cl. 73-587.000.

Westinghouse Air Brake Company: *See*—
Hyler, John H.; Lott, Walter E.; and Johnson, Clifford E., 4,207,691, Cl. 37-124.000.

Hyler, John H.; Lott, Walter E.; and Johnson, Clifford E., 4,207,692, Cl. 37-129.000.
Westinghouse Electric Corp.: *See—*
Colston, John R., 4,208,152, Cl. 405-186.000.
Frost, Lawrence W., 4,208,343, Cl. 260-465.00E.
Heine, Thomas H., 4,208,618, Cl. 315-324.000.
Impink, Albert J., Jr., 4,208,247, Cl. 176-19.00R.
Misencik, John J.; and Davidson, Ronnie D., 4,208,688, Cl. 361-46.000.
Mulach, Arthur; and Jones, Warren W., 4,208,597, Cl. 310-59.000.
Newton, Ralph E., 4,208,606, Cl. 313-274.000.
Panaccione, Elmer S., 4,208,448, Cl. 427-67.000.
Paruso, Deborah M.; and Yoldas, Bulent E., 4,208,475, Cl. 429-193.000.
Phillips, D. Colin, 4,208,655, Cl. 340-627.000.
Rush, Donald L., 4,208,717, Cl. 364-426.000.
Sun, Shan C.; and Church, Larry L., 4,208,687, Cl. 361-20.000.
Thompson, John H.; and Douglas, George R., 4,208,737, Cl. 367-171.000.
Yannone, Robert A.; and Shields, James J., 4,208,591, Cl. 290-40.00R.
Westover, Jack D., to Pillsbury Company, The. Process for cooking dough products. 4,208,441, Cl. 426-293.000.
Westran, William C., to Bib Hi-Fi Accessories Limited. Tape head cleaning device. 4,207,644, Cl. 15-210.00R.
Westvaco Corporation: *See—*
Lokey, Burke P., 4,208,234, Cl. 156-351.000.
Wetmore, Sherman B.; and Person, Abraham, to Global Marine, Inc. Self-cleaning inlet screen to an ocean riser pipe. 4,208,290, Cl. 210-460.000.
Weyerhaeuser Company: *See—*
Niemi, Allan J., 4,207,761, Cl. 72-354.000.
Wharton, Joseph E. Device for deterring unauthorized operation of an internal combustion engine. 4,207,850, Cl. 123-146.50B.
Wheelabrator-Frye Inc.: *See—*
Leliaert, Raymond M.; Kanouse, Richard C.; Butler, Bill J.; and Linder, Robert N., 4,207,711, Cl. 51-432.000.
Wheelock, Kenneth S.: *See—*
Gladrow, Elroy M.; and Wheelock, Kenneth S., 4,208,269, Cl. 208-120.000.
Whipp, Arthur A.: *See—*
Chan, David C. K.; and Whipp, Arthur A., 4,208,348, Cl. 260-556.00A.
White, Frank F., to Automation Development Corporation. Bar cut-off feeding machine. 4,208,164, Cl. 414-748.000.
White, Henry J., to Research Corporation of the University of Hawaii, The. Method and apparatus for cleaning heat exchanger tubes mounted transversely to vertical flow of seawater. 4,208,220, Cl. 134-7.000.
Whittle, Kenneth F., to Protein Foods (U.K.) Limited. Apparatus and method for mixing material. 4,208,134, Cl. 366-147.000.
Wible, Joseph B.: *See—*
Copeland, Leonard H.; and Wible, Joseph B., 4,207,733, Cl. 368-108.000.
Wickline, William A.: *See—*
Horn, Dale W.; and Wickline, William A., 4,208,662, Cl. 343-792.000.
Wiesner, Herbert: *See—*
Reibetanz, Wilbert; Sigg, Horst; Wiesner, Herbert; Wanner, Karl; Hansel, Gernot; Seitz, Karl; and Bleicher, Manfred, 4,207,953, Cl. 175-209.000.
Wikstrom, Rolf, to Stal-Laval Turbin AB. Composite stator type turbomachine. 4,208,165, Cl. 415-138.000.
Wilcher, Gene E. Liquid applicator. 4,207,909, Cl. 132-88.500.
Wilcox, Allan K.; Wilcox, Mark I.; and Peek, Steven L. Two-way, multiple bottom plow with lift assist. 4,207,951, Cl. 172-225.000.
Wilcox, Mark I.: *See—*
Wilcox, Allan K.; Wilcox, Mark I.; and Peek, Steven L., 4,207,951, Cl. 172-225.000.
Wild, David E.: *See—*
Lloyd, John W.; Wild, David E.; and Evatt, Humphry R., 4,207,897, Cl. 128-303.100.
Wild, Hans J.: *See—*
Huber, Ulrich; and Wild, Hans J., 4,208,338, Cl. 260-347.800.
Wildner, Horst: *See—*
Zachmeier, Alois; Wildner, Horst; and Kolbl, Heinz, 4,208,120, Cl. 354-354.000.
Wilkins, Cletus W., Jr.: *See—*
Bowden, Murrae J. S.; Felt, Eugene D.; Thompson, Larry F.; and Wilkins, Cletus W., Jr., 4,208,211, Cl. 430-314.000.
Wilkinson, John N., to Optical Radiation Corporation. Method and apparatus for winding an endless tape. 4,208,018, Cl. 242-55.19R.
Wilkinson Sword Limited: *See—*
Lyall, Robert; Maxwell, Ian; and Buckle, Valerie A., 4,208,189, Cl. 44-42.000.
Willemsen, Henricus P.: *See—*
Horowitz, Alexandre; Heerema, Pieter S.; and Willemsen, Henricus P., 4,207,828, Cl. 114-125.000.
Williams, David W., to United States of America, Air Force. Automatic data restore apparatus for MNOS temporary store memory. 4,208,729, Cl. 365-184.000.
Williams, Louis C.: *See—*
Shueh, Samuel B.; and Williams, Louis C., 4,207,753, Cl. 62-285.000.
Wilson, David F., Jr. Welding splatter shield. 4,208,458, Cl. 428-126.000.
Wilson, George. Hitch construction. 4,208,064, Cl. 280-502.000.
Wilson Industries, Inc.: *See—*
Nelson, Paul M., 4,207,925, Cl. 138-44.000.
Wilson, Robert J. Constant force spring powered exercising apparatus. 4,208,049, Cl. 272-138.000.
Wilson, Thomas W. Concrete form tie rod and fastener. 4,208,030, Cl. 249-217.000.
Wimberly, John T. Twin reel beltwinder. 4,208,022, Cl. 242-86.520.
Winter, Wolfgang: *See—*
Silber, Dieter; Fullman, Marius; Finck, Karl-Julius; and Winter, Wolfgang, 4,208,669, Cl. 357-38.000.
Winterbottom, Harold E. Punching bag including power gauge. 4,208,048, Cl. 272-76.000.
Wirth, Thaddaus: *See—*
Kraft, Kurt; Walz, Gerd; and Wirth, Thaddaus, 4,208,488, Cl. 525-107.000.
Withycombe, Donald A.; Mookherjee, Braja D.; Vock, Manfred H.; and Vinals, Joaquin F., to International Flavors & Fragrances Inc. Isobutyl substituted heterocyclic compounds for augmenting or enhancing the organoleptic properties of smoking tobaccos and smoking tobacco articles. 4,207,905, Cl. 131-17.00R.
Witzel, Frank: *See—*
Friello, Dominick R.; Witzel, Frank; Clark, K. Warren; and Mackay, Donald A. M., 4,208,431, Cl. 426-3.000.
Wohlert, Chester G., to Aerospex Corporation, a part interest. Heater element mounting. 4,207,672, Cl. 29-611.000.
Wolf, Ludwig, Jr.: *See—*
Munsch, John M.; and Wolf, Ludwig, Jr., 4,208,193, Cl. 55-36.000.
Wolfe, Saul, to Queen's University at Kingston. Preparation of 1-oxapenicillins and 4-acyloxy azetidinone intermediates therefor. 4,208,325, Cl. 260-239.00A.
Wolske, Eugene H., to Bemis Company, Inc. Packeting net bags. 4,207,983, Cl. 206-554.000.
Woltersdorf, Otto W., Jr.: *See—*
Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., 4,208,413, Cl. 424-250.000.
Wood, Betty J. Chile rellenos and process of making the same. 4,208,435, Cl. 426-92.000.
Wood, Charles H.: *See—*
Eastlund, Bernard J.; Wood, Charles H.; Couch, Robert W.; and Ury, Michael G., 4,208,587, Cl. 250-492.00R.
Wood, Robert C.: *See—*
Deardorff, Paul A.; Wood, Robert C.; and Cundari, Sante M., 4,208,226, Cl. 149-37.000.
Wotowiec, Joseph P., to General Electric Company. Mounting means for lamp fixture. 4,208,702, Cl. 362-217.000.
Wu, Ching H.: *See—*
Hall, Wilbur L.; French, Charles R.; Wu, Ching H.; and Brown, Alfred, 4,207,945, Cl. 166-272.000.
Wuerker, Ralph F.: *See—*
Arnush, Donald; MacKenzie, Kenneth R.; and Wuerker, Ralph F., 4,208,582, Cl. 250-291.000.
Wunning, Joachim. Process and apparatus for making rod-shaped bodies from sinterable granular material. 4,208,367, Cl. 264-43.000.
Wurlitzer Company, The: *See—*
Hoskinson, William R., 4,207,792, Cl. 84-1.010.
Ippolito, Anthony C.; and Hoskinson, William R., 4,207,793, Cl. 84-1.240.
Wurster, Helmut: *See—*
Hiltebrandt, Siegfried; and Wurster, Helmut, 4,207,887, Cl. 128-207.280.
Xerox Corporation: *See—*
Jagger, Brian E., 4,208,141, Cl. 400-335.000.
Yago, Jeffrey R., to Estep, Jess. Method for making augers. 4,208,004, Cl. 228-173.00D.
Yakimowich, Peter; and Verkerke, Paul E., to General Motors Corporation. Air precleaner. 4,208,197, Cl. 55-315.000.
Yakura, Masatake: *See—*
Ichikawa, Hiroshi; and Yakura, Masatake, 4,208,017, Cl. 242-47.010.
Yamada, Tsuyoshi: *See—*
Fukawa, Isaburo; Satake, Kunio; Yamada, Tsuyoshi; Hayakawa, Kiyoshi; and Sato, Yasushi, 4,208,356, Cl. 525-89.000.
Yamaguchi, Hachiro; Noguchi, Tatsuhiko; and Endo, Kiichi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Grouting materials for consolidation of soils. 4,208,216, Cl. 106-74.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Hashimoto, Mashayuki, 4,207,960, Cl. 180-228.000.
Yan, Tsoung Y.: *See—*
Audeh, Costandi A.; and Yan, Tsoung Y., 4,208,263, Cl. 204-188.000.
Yanagida, Tuneo, to Olympus Optical Co., Ltd. Motor circuit of a tape recorder. 4,208,622, Cl. 318-257.000.
Yanagihara, Hiromichi: *See—*
Satake, Toshihiko; Yanagihara, Hiromichi; and Horie, Takashi, 4,208,274, Cl. 209-44.200.
Yannone, Robert A.; and Shields, James J., to Westinghouse Electric Corp. Gas turbine power plant control apparatus including a turbine load control system. 4,208,591, Cl. 290-40.00R.
Yao, Shi-kay: *See—*
Thompson, David E.; Anderson, Dean B.; August, Rudolf R.; and Yao, Shi-kay, 4,208,128, Cl. 356-350.000.
Yarcusko, Margaret S.: *See—*
Lewis, David L.; Schenker, Barry A.; Suchanski, Mary R.; and Franks, C. Richard, deceased, 4,208,450, Cl. 427-126.300.

Yasuda, Mitsuo: *See*—
Imaizumi, Masao; Yasuda, Mitsuo; Sakata, Ko; and Hirano, Noboru, 4,208,540, Cl. 585-809.000.

Yasugahira, Norio; Sato, Takeshi; and Tsubouchi, Kuniyoshi, to Hitachi, Ltd. Blade lattice structure for axial fluid machine. 4,208,167, Cl. 415-217.000.

Yasukawa, Junichi: *See*—
Todoroki, Nobuaki; and Yasukawa, Junichi, 4,208,261, Cl. 204-181.00C.

Yavrouian, Andre H., to Calbiochem-Behring Corp. 3-Hydroxy-3-methylglutaric acid monoamide and derivatives thereof. 4,208,204, Cl. 71-97.000.

Yazaki Corporation: *See*—
Ichikawa, Hiroshi; and Yakura, Masatake, 4,208,017, Cl. 242-47.010.

Yazaki, Mutsunobu: *See*—
Ito, Fumio; and Yazaki, Mutsunobu, 4,208,114, Cl. 354-86.000.

Yeager, Harvey P.: *See*—
Causey, Warren L.; Yeager, Harvey P.; and Burchell, Clarence, 4,207,675, Cl. 30-296.00R.

Yee, Kwok C.; Chance, Ronald R.; and Baughman, Ray H., to Allied Chemical Corporation. Carbazolyl diacetylenic polymers. 4,208,501, Cl. 526-259.000.

Yevick, George J., to Izon Corporation. Method of making a plurality of adjacent light pipe elements. 4,208,363, Cl. 264-1.000.

Yin, Huo-Bing; and Hallett, Robert J., to International Business Machines Corporation. Adaptive delta modulation system. 4,208,740, Cl. 375-30.000.

Yin-Lung, Yang: *See*—
Chiang-Cheng, Fu; and Yin-Lung, Yang, 4,207,965, Cl. 182-13.000.

Yoldas, Bulent E.: *See*—
Paruso, Deborah M.; and Yoldas, Bulent E., 4,208,475, Cl. 429-193.000.

Yonan, Peter K., to G. D. Searle & Co. 5-Aryl-1-(2-oxazolin-2-yl)-1H-1,4-benzodiazepines and related compounds. 4,208,327, Cl. 260-239.30R.

Yoneda, Kenji; and Nishimura, Toshifumi, to Nissan Motor Company, Limited. Exhaust gas purifying system for multi-cylinder internal combustion engine. 4,207,738, Cl. 60-278.000.

Yorgensen, Phillip, to Kemmerer Coal Company, The. Reflecting target for electronic distance measuring. 4,208,097, Cl. 350-97.000.

Yoshida, Masaaki; Watanabe, Masao; Tohma, Kimio; and Noda, Mitsuhiko, to Sumitomo Chemical Industries, Ltd. Apparatus for treatment of rubber and plastic wastes. 4,208,252, Cl. 202-105.000.

Yoshida, Naoshi: *See*—
Kiga, Shotaro; Yoshida, Naoshi; Edahiro, Kenichi; and Sakata, Tadashi, 4,208,246, Cl. 162-106.000.

Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. Use of 2,2,3,-trimethyl-3-cyclopenten-1-ylalkenyl and alkylidene cycloalkanols and cycloalkanones in augmenting or enhancing the aroma of detergents. 4,208,296, Cl. 252-174.110.

Yoshimatsu, Sachihiro: *See*—
Nakazato, Norio; Saho, Norihide; Yoshimatsu, Sachihiro; and Okabe, Michimasa, 4,208,199, Cl. 62-29.000.

Yoshinaga, Makoto: *See*—
Sogi, Shinroku; Yoshinaga, Makoto; Shinohara, Toshio; Aihara, Takayuki; and Tawara, Ikuo, 4,208,484, Cl. 435-286.000.

Youdin, Myron; Clagnaz, Mario W., Jr.; and Louie, Henry, to New York University. Wheelchair mounted control apparatus. 4,207,959, Cl. 180-167.000.

Young, Charles J.: *See*—
Rasala, Edward J.; and Young, Charles J., 4,208,722, Cl. 364-760.000.

Young, Harold K.: *See*—
Wald, Herbert; Young, Harold K.; and Meadows, Lacy C., 4,207,831, Cl. 118-63.000.

Yukitake, Tugihiro: *See*—
Isahaya, Fumio; and Yukitake, Tugihiro, 4,208,381, Cl. 423-210.000.

Zachmeier, Alois; Wildner, Horst; and Kolbl, Heinz, to AGFA-Gevaert, A.G. Apparatus for winding portions of films onto takeup reels which are confined in cassettes or the like. 4,208,120, Cl. 354-354.000.

Zalyaljutdinov, Klim G.: *See*—
Pershin, Gennady D.; Zalyaljutdinov, Klim G.; Gimazetdinov, Rais F.; Egorov, Vladimir D.; and Schegolev, Gennady K., 4,207,928, Cl. 140-115.000.

Zampiello, Pamela, to GTE Laboratories Incorporated. Method for color television picture tube aperture mask production employing PVA and removing the PVA by partial carmelizing and washing. 4,208,242, Cl. 156-659.100.

Zaweski, Edward F., to Ethyl Corporation. Improved crankcase lubricant composition. 4,208,293, Cl. 252-51.50A.

Zeidler, Reinhold C., to Borg-Warner Corporation. Automatic wear compensator for Belleville spring clutches. 4,207,972, Cl. 192-111.00A.

Zeller Corporation, The: *See*—
Weible, Warren W., 4,207,755, Cl. 64-15.00B.

Zenith Radio Corporation: *See*—
Schwartz, James W., 4,208,610, Cl. 313-414.000.

Zenner, Walter J., to Teletype Corporation. Secrecy system. 4,208,545, Cl. 178-22.000.

Zimmerle, James R.; and Baker, Thomas B., to ACF Industries, Incorporated. Hopper car outlet gate assembly. 4,207,822, Cl. 105-253.000.

Zimmerman, Dennis M.; and Marshall, Winston S., to Eli Lilly and Company. N-Alkenyl decahydroisoquinolines. 4,208,524, Cl. 546-144.000.

Zimmermann, Volker W.: *See*—
Matla, Arno; Matthaei, Horst D.; and Zimmermann, Volker W., 4,208,685, Cl. 360-107.000.

Zinkovich, K. Helen. Combination corrective toe separator apparatus and pedicure aid. 4,207,880, Cl. 128-81.00R.

Zoula, Louis. Pulling tool for extracting bushings and bearings. 4,207,664, Cl. 29-264.000.

Zuk, Robert F.; and Maggio, Edward T., to Syva Company. Label modified immunoassays. 4,208,479, Cl. 435-7.000.

Zulauf, Gary B.: *See*—
Snaper, Alvin A.; and Zulauf, Gary B., 4,208,643, Cl. 335-52.000.

Zweig, Judith E., to Shell Oil Company. Footwear composition of a blend of ethylene-vinyl acetate copolymer, poly(vinyl chloride) and a block copolymer. 4,208,315, Cl. 260-33.6AQ.

Zylstra, Henry J.: *See*—
Dickens, James W.; McGinnis, James P.; and Zylstra, Henry J., 4,208,693, Cl. 361-94.000.
Dunham, Robert W.; McGinnis, James P.; and Zylstra, Henry J., 4,208,689, Cl. 361-48.000.
McGinnis, James P.; and Zylstra, Henry J., 4,208,690, Cl. 361-48.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF JUNE, 1980

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Alfa-Laval AB: *See—*
Stenstrom, Lennart A., Re. 30,310, Cl. 219-10.55M.

Arbogast, Vernon E. Cable take up load binder. Re. 30,307, Cl. 410-37.000.

Braun, Stephen A.: *See—*
Moore, James W.; and Braun, Stephen A., Re. 30,306, Cl. 181-229.000.

Caruso, Lorenzo. Device and method for programmed hair coloring. Re. 30,305, Cl. 132-9.000.

Cousse, Henri; Mouzin, Gilbert; Vezin, Jean-Claude; d'Hinterland, Lucien D.; and Dubois, Jacques, to Pierre Fabre S.A. N-Alkyl-3-pyridinium-methanol fluorides and derivatives thereof. Re. 30,309, Cl. 424-52.000.

Deere & Company: *See—*
Moore, James W.; and Braun, Stephen A., Re. 30,306, Cl. 181-229.000.

d'Hinterland, Lucien D.: *See—*
Cousse, Henri; Mouzin, Gilbert; Vezin, Jean-Claude; d'Hinterland, Lucien D.; and Dubois, Jacques, Re. 30,309, Cl. 424-52.000.

Dubois, Jacques: *See—*
Cousse, Henri; Mouzin, Gilbert; Vezin, Jean-Claude; d'Hinterland, Lucien D.; and Dubois, Jacques, Re. 30,309, Cl. 424-52.000.

Lear Siegler, Inc.: *See—*
Masser, Lloyd D., Re. 30,308, Cl. 280-713.000.

Masser, Lloyd D., to Lear Siegler, Inc. Suspension structure for automotive vehicles. Re. 30,308, Cl. 280-713.000.

Moore, James W.; and Braun, Stephen A., to Deere & Company. Air intake silencer. Re. 30,306, Cl. 181-229.000.

Mouzin, Gilbert: *See—*
Cousse, Henri; Mouzin, Gilbert; Vezin, Jean-Claude; d'Hinterland, Lucien D.; and Dubois, Jacques, Re. 30,309, Cl. 424-52.000.

Pierre Fabre S.A.: *See—*
Cousse, Henri; Mouzin, Gilbert; Vezin, Jean-Claude; d'Hinterland, Lucien D.; and Dubois, Jacques, Re. 30,309, Cl. 424-52.000.

Stenstrom, Lennart A., to Alfa-Laval AB. Method and apparatus for treating heat-sensitive products. Re. 30,310, Cl. 219-10.55M.

Vezin, Jean-Claude: *See—*
Cousse, Henri; Mouzin, Gilbert; Vezin, Jean-Claude; d'Hinterland, Lucien D.; and Dubois, Jacques, Re. 30,309, Cl. 424-52.000.

LIST OF PLANT PATENTEES

Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara": *See—*
Holtkamp, Reinhold, 4,546, Cl. 69.000.
Holtkamp, Reinhold, 4,547, Cl. 69.000.
Holtkamp, Reinhold, 4,548, Cl. 69.000.
Holtkamp, Reinhold, 4,549, Cl. 69.000.
Holtkamp, Reinhold, 4,550, Cl. 69.000.
Holtkamp, Reinhold, 4,551, Cl. 69.000.

Holtkamp, Reinhold, to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara". African violet plant. 4,546, 6-17-80, Cl. 69.000.

Holtkamp, Reinhold, to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara". African violet plant. 4,547, 6-17-80, Cl. 69.000.

Holtkamp, Reinhold, to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara". African violet plant. 4,548, 6-17-80, Cl. 69.000.

Holtkamp, Reinhold, to Gesellschaftsvertrag uber die Erfindergemeinschaft "OPTIMARA". African violet plant. 4,549, 6-17-80, Cl. 69.000.

Holtkamp, Reinhold, to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara". African violet plant. 4,550, 6-17-80, Cl. 69.000.

Holtkamp, Reinhold, to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara". African violet plant. 4,551, 6-17-80, Cl. 69.000.

LIST OF DESIGN PATENTEES

A. H. Robins Company, Inc.: *See—*
Greenberg, Jack, 255,485, Cl. D23-150.000.

Ahrens, Steven E. Telephone. 255,445, 6-17-80, Cl. D14-53.000.

Aktiebolaget Svenska Kullagerfabriken. *See—*
Dahlstrom, Roland, 255,447, Cl. D14-82.000.

Alexander, Fred D., to American Home Products Corporation. Broiler pan insert. 255,413, 6-17-80, Cl. D7-96.000.

Allgood, Charles H., II. Plaque. 255,437, 6-17-80, Cl. D11-133.000.

Allgood, Charles H., II. Trophy. 255,441, 6-17-80, Cl. D11-157.000.

American Antenna Corporation: *See—*
Liautaud, James P., 255,449, Cl. D14-86.000.

American Home Products Corporation: *See—*
Alexander, Fred D., 255,413, Cl. D7-96.000.

Anderson, Jack G.; and Guerriere, Thomas V., to ILC Data Device Corporation. Travel alarm clock. 255,433, 6-17-80, Cl. D10-15.000.

Anderson, Robert P. Clasp for a rope halter. 255,501, 6-17-80, Cl. D30-27.000.

Anderson, Robert P. Keeper for a rope halter. 255,502, 6-17-80, Cl. D30-27.000.

Anson, Robert A. Child's feeding spoon or the like. 255,414, 6-17-80, Cl. D7-141.000.

Applied Concepts, Inc.: *See—*
Barclay, Rod; Cunningham, John A.; Mead, Alan B.; and Spaits, Joseph T., 255,464, Cl. D21-13.000.

Ashton, Harold P.; and Conti, Rino, to Dart Industries Inc. Plant receptacle or the like. 255,439, 6-17-80, Cl. D11-152.000.

Ashton, Harold P.: *See—*
Petruzzi, Thomas G.; Ashton, Harold P.; and Conti, Rino, 255,410, Cl. D6-182.000.

Ball Corporation: *See—*
Stahel, Alwin J., II, 255,438, Cl. D11-146.000.

Barclay, Rod; Cunningham, John A.; Mead, Alan B.; and Spaits, Joseph T., to Applied Concepts, Inc. Electronic chess game board. 255,464, 6-17-80, Cl. D21-13.000.

Bateman, Robert F.: *See—*
Swett, James B.; Bateman, Robert F.; and Fritz, Ann K., 255,411, Cl. D6-269.000.

Bathurst, Jess N., to Kaiser Aluminum & Chemical Corporation. End closure for a container. 255,423, 6-17-80, Cl. D9-253.000.

Bathurst, Jess N., to Kaiser Aluminum & Chemical Corporation. End closure for a container. 255,424, 6-17-80, Cl. D9-253.000.

Bathurst, Jess N., to Kaiser Aluminum & Chemical Corporation. End closure for a container. 255,425, 6-17-80, Cl. D9-253.000.

Bell Helmets, Inc.: *See—*
McNabb, Otho F., 255,394, Cl. D2-231.000.

Bender, Alvin A., to Valley Environments. Room ionizer. 255,486, 6-17-80, Cl. D23-150.000.

Benty, John L., to Schick Incorporated. Hair curling iron. 255,499, 6-17-80, Cl. D28-35.000.

Bereza, Nicholas. Pie crust maker, or similar article. 255,412, 6-17-80, Cl. D7-43.000.

Berg, Soren: *See—*
Sundstrom, Tommy; and Berg, Soren, 255,495, Cl. D25-17.000.

Bevilacqua, Ernest M.; Hawthorne, Allen D.; and Noyes, Eliot F., to International Business Machines Corporation. Electrophotographic apparatus or the like. 255,456, 6-17-80, Cl. D16-30.000.

Bogner, Max; and Grun, Larry. Finger ring. 255,436, 6-17-80, Cl. D11-38.000.

Boot, Robin P., to Mettoy Company Limited, The. Toy figure. 255,475, 6-17-80, Cl. D21-166.000.

Borkan, Florence, to Pharmacaps, Inc. Combined bottle cap and capsule piercing device. 255,427, 6-17-80, Cl. D9-261.000.

Brancaccio, Thomas J.; and Ragone, Bernardo P., to Vitamaster Industries, Inc. Steam cabinet. 255,491, 6-17-80, Cl. D24-37.000.

Brittner, Frank W., to J & J Snack Food Corp. Combined display case and light fixture therefor. 255,407, 6-17-80, Cl. D6-172.000.

Button, Dennis K., to Para Band, Ltd. Belt. 255,397, 6-17-80, Cl. D2-380.000.

Carl Kurt Walther GmbH & Co. KG: *See*—
Walther, Carl K.; Walther, Henning D.; Hageluken, Hubert P.; and Teme, Karl, 255,450, Cl. D15-124.000.

Carlmark, Rolf, to Strand, Bjorn. Horseshoe. 255,503, 6-17-80, Cl. D30-35.000.

CBS Inc.: *See*—
Clark, Forrest W.; and Donohoe, David G., 255,463, Cl. D17-22.000.
Satten, Michael I., 255,474, Cl. D21-109.000.

Chambers, James R., to Outdoor Sports Industries, Inc. Collimator spud. 255,478, 6-17-80, Cl. D22-7.000.

Champion International Corporation: *See*—
Dutcher, Daniel P., 255,422, Cl. D9-245.000.

Chase, Richard A.; Van Dyke, Jacob; and Duy, Franz, to Johnson & Johnson. Toy block. 255,473, 6-17-80, Cl. D21-108.000.

Cincinnati Milacron Inc.: *See*—
Piotrowski, Tadeusz W., 255,452, Cl. D15-140.000.
Piotrowski, Tadeusz W., 255,453, Cl. D15-140.000.

Clark, Forrest W.; and Donohoe, David G., to CBS Inc. Receiver hardware for percussive musical instruments. 255,463, 6-17-80, Cl. D17-22.000.

Clarke, John G. Cigarette smoking device with concealed cigarette holder or similar device. 255,497, 6-17-80, Cl. D27-03.000.

Conner, James M.; and Van Allen, David E., to Polaroid Corporation. Photographic strobe-light or similar article. 255,457, 6-17-80, Cl. D16-42.000.

Conner, James M., to Polaroid Corporation. Photographic strobe-light or similar article. 255,458, 6-17-80, Cl. D16-42.000.

Conti, Rino: *See*—
Ashton, Harold P.; and Conti, Rino, 255,439, Cl. D11-152.000.
Petruzzi, Thomas G.; Ashton, Harold P.; and Conti, Rino, 255,410, Cl. D6-182.000.

Corder, James T. Wrist-mounted flutist's lyre. 255,459, 6-17-80, Cl. D17-13.000.

Cox, Zula B. Doll. 255,476, 6-17-80, Cl. D21-169.000.

Crawford, Ralph W., to Quaker Oats Company, The. Action toy. 255,467, 6-17-80, Cl. D21-59.000.

Cunningham, John A.: *See*—
Barclay, Rod; Cunningham, John A.; Mead, Alan B.; and Spaits, Joseph T., 255,464, Cl. D21-13.000.

D & R Enterprises, Inc.: *See*—
Deptula, Waclaw, 255,469, Cl. D21-88.000.

Dahlstrom, Roland, to Aktiebolaget Svenska Kullagerfabriken. Television monitor. 255,447, 6-17-80, Cl. D14-82.000.

Dal Industries, Inc.: *See*—
Kanarek, Jesse J., 255,488, Cl. D23-155.000.
Kanarek, Jesse J., 255,489, Cl. D23-155.000.

Dart Industries Inc.: *See*—
Ashton, Harold P.; and Conti, Rino, 255,439, Cl. D11-152.000.
Petruzzi, Thomas G.; Ashton, Harold P.; and Conti, Rino, 255,410, Cl. D6-182.000.
Swett, James B.; Bateman, Robert F.; and Fritz, Ann K., 255,411, Cl. D6-269.000.

Davis, John E.: *See*—
Gensike, Karl H.; and Davis, John E., 255,455, Cl. D16-14.000.

Deptula, Waclaw, to D & R Enterprises, Inc. Kite or similar article. 255,469, 6-17-80, Cl. D21-88.000.

De Villers, Bill. Sports equipment rack. 255,405, 6-17-80, Cl. D6-132.000.

Dillemuth, Arnold H. Combined mirror and mounting bracket. 255,442, 6-17-80, Cl. D12-187.000.

Doi, Tetsuyuki: *See*—
Sakamoto, Masakazu; and Doi, Tetsuyuki, 255,417, Cl. D8-62.000.

Donohoe, David G.: *See*—
Clark, Forrest W.; and Donohoe, David G., 255,463, Cl. D17-22.000.

DuBois, Willsey W.: *See*—
Kaufman, George; and DuBois, Willsey W., 255,426, Cl. D9-258.000.

Dupzyk, James R.: *See*—
Ricca, Robert; Ricca, Frank; and Dupzyk, James R., 255,468, Cl. D21-72.000.

Dutcher, Daniel P., to Champion International Corporation. Carton blank. 255,422, 6-17-80, Cl. D9-245.000.

Duy, Franz: *See*—
Chase, Richard A.; Van Dyke, Jacob; and Duy, Franz, 255,473, Cl. D21-108.000.

Dye, Bill H.; and Feth, Karl G., to San-I-Tech of St. Louis, Inc. Grease interceptor. 255,479, 6-17-80, Cl. D23-2.000.

Eli Lilly and Company: *See*—
Rosen, Marc A., 255,420, Cl. D9-10.000.

Fairchild Camera and Instrument Corp.: *See*—
Talesfore, Nick, 255,432, Cl. D10-15.000.

Feth, Karl G.: *See*—
Dye, Bill H.; and Feth, Karl G., 255,479, Cl. D23-2.000.

Foley, William J. Chimney cap. 255,487, 6-17-80, Cl. D23-154.000.

Frantic Feet Toy, Company: *See*—
Ricca, Robert; Ricca, Frank; and Dupzyk, James R., 255,468, Cl. D21-72.000.

Fritz, Ann K.: *See*—
Swett, James B.; Bateman, Robert F.; and Fritz, Ann K., 255,411, Cl. D6-269.000.

Gabriel, Richard J., to Matrix Toys, Inc. Joint element for construction set. 255,472, 6-17-80, Cl. D21-108.000.

Geffner, Samuel. Shop apron. 255,392, 6-17-80, Cl. D2-229.000.

General Electric Company: *See*—
Houlihan, John T., 255,444, Cl. D14-6.000.

General Signal Corporation: *See*—
Herbst, Norman R.; Salzman, Ronald N.; Hutchings, William F.; and Montagno, William J., 255,451, Cl. D15-138.000.

Gensike, Karl H.; and Davis, John E., to Photomatrix Corporation. Opaque reader. 255,455, 6-17-80, Cl. D16-14.000.

Gettman, Jules. Television channel selector knob. 255,448, 6-17-80, Cl. D14-84.000.

Gida, Walter L. Putter. 255,477, 6-17-80, Cl. D21-218.000.

Gorman, Sam. Fireplace mantel. 255,483, 6-17-80, Cl. D23-138.100.

Gorman, Sam. Fireplace mantel. 255,484, 6-17-80, Cl. D23-138.100.

Greenberg, Jack, to A. H. Robins Company, Inc. Insecticide-containing insect combatting device. 255,485, 6-17-80, Cl. D23-150.000.

Grun, Larry: *See*—
Bogner, Max; and Grun, Larry, 255,436, Cl. D11-38.000.

Guerriere, Thomas V.: *See*—
Anderson, Jack G.; and Guerriere, Thomas V., 255,433, Cl. D10-15.000.

Gulden, Mortimer. Box splint. 255,493, 6-17-80, Cl. D24-64.000.

Hageluken, Hubert P.: *See*—
Walther, Carl K.; Walther, Henning D.; Hageluken, Hubert P.; and Teme, Karl, 255,450, Cl. D15-124.000.

Hanson, Larry K. Frame leveler. 255,434, 6-17-80, Cl. D10-69.000.

Hawthorne, Allen D.: *See*—
Bevilacqua, Ernest M.; Hawthorne, Allen D.; and Noyes, Eliot F., 255,456, Cl. D16-30.000.

Herbst, Norman R.; Salzman, Ronald N.; Hutchings, William F.; and Montagno, William J., to General Signal Corporation. Blade for mixing liquids in a conduit. 255,451, 6-17-80, Cl. D15-138.000.

Hosokawa, Takeshi: *See*—
Yoshida, Noboru; Oda, Hiroshi; and Hosokawa, Takeshi, 255,443, Cl. D13-11.000.

Houlihan, John T., to General Electric Company. Combined tape recorder and player or similar article. 255,444, 6-17-80, Cl. D14-6.000.

Hovsepian, Charles J., to Packaging Systems Corporation. Display spool for a wristwatch or the like. 255,421, 6-17-80, Cl. D9-171.000.

Hume, Clyde H. Cleat for deck line retriever. 255,419, 6-17-80, Cl. D8-382.000.

Hutchings, William F.: *See*—
Herbst, Norman R.; Salzman, Ronald N.; Hutchings, William F.; and Montagno, William J., 255,451, Cl. D15-138.000.

ILC Data Device Corporation: *See*—
Anderson, Jack G.; and Guerriere, Thomas V., 255,433, Cl. D10-15.000.

International Business Machines Corporation: *See*—
Bevilacqua, Ernest M.; Hawthorne, Allen D.; and Noyes, Eliot F., 255,456, Cl. D16-30.000.
McCroskery, Allan L., 255,400, Cl. D3-30.000.

Itakura, Hitoshi, to Tomy Kogyo Co., Inc. Golf game casing. 255,465, 6-17-80, Cl. D21-27.000.

Iwata Electric Co., Ltd.: *See*—
Iwata, Keisuke, 255,446, Cl. D14-68.000.

Iwata, Keisuke, to Iwata Electric Co., Ltd. Radio receiver. 255,446, 6-17-80, Cl. D14-68.000.

J & J Snack Food Corp.: *See*—
Brittner, Frank W., 255,407, Cl. D6-172.000.

Jacobson, Paul R.: *See*—
Scheinhaus, Myron G.; and Jacobson, Paul R., 255,396, Cl. D2-326.000.

Johnson & Johnson: *See*—
Chase, Richard A.; Van Dyke, Jacob; and Duy, Franz, 255,473, Cl. D21-108.000.

Johnson, Ray W. Simulative toy top. 255,470, 6-17-80, Cl. D21-96.000.

Kaiser Aluminum & Chemical Corporation: *See*—
Bathurst, Jess N., 255,423, Cl. D9-253.000.
Bathurst, Jess N., 255,424, Cl. D9-253.000.
Bathurst, Jess N., 255,425, Cl. D9-253.000.

Kanarek, Jesse J., to Dal Industries, Inc. Destaticizing blower. 255,488, 6-17-80, Cl. D23-155.000.

Kanarek, Jesse J., to Dal Industries, Inc. Destaticizing blower. 255,489, 6-17-80, Cl. D23-155.000.

Kaufman, George; and DuBois, Willsey W., to Union Carbide Corporation. Combined cap for a pressurized can, squeegee and scraper. 255,426, 6-17-80, Cl. D9-258.000.

Kozerski, Henry. Set of chessmen. 255,466, 6-17-80, Cl. D21-52.000.

Kretz, Edward J., to Owens-Illinois, Inc. Stopper. 255,428, 6-17-80, Cl. D9-284.000.

Levun, Henry D. Cigarette snuffer. 255,498, 6-17-80, Cl. D27-09.000.

Liautaud, James P., to American Antenna Corporation. Mobile antenna. 255,449, 6-17-80, Cl. D14-86.000.

Loechel, Stephen J., to Motley Manufacturing Agencies Pty. Ltd. Toy construction piece. 255,471, 6-17-80, Cl. D21-108.000.

Loew, Edgar M. Umbrella scabbard. 255,399, 6-17-80, Cl. D3-11.000.

Lundgren, John C., to Maxwell Products, Inc. Adjustable bed. 255,402, 6-17-80, Cl. D6-79.000.

Madison, Donald R. Flexible sun visor. 255,395, 6-17-80, Cl. D2-247.000.

Marmorale, John J. Combined compass and digital clock. 255,431, 6-17-80, Cl. D10-2.000.

Matrix Toys, Inc.: *See—*
Gabriel, Richard J., 255,472, Cl. D21-108.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Yoshida, Noboru; Oda, Hiroshi; and Hosokawa, Takeshi, 255,443, Cl. D13-11.000.
Maxwell Products, Inc.: *See—*
Lundgren, John C., 255,402, Cl. D6-79.000.
McCroskery, Allan L., to International Business Machines Corporation. Type element storage container. 255,400, 6-17-80, Cl. D3-30.000.
McNabb, Otho F., to Bell Helmets, Inc. Ribbed helmet. 255,394, 6-17-80, Cl. D2-231.000.
Mead, Alan B.: *See—*
Barclay, Rod; Cunningham, John A.; Mead, Alan B.; and Spaits, Joseph T., 255,464, Cl. D21-13.000.
Meierhoefer, Eugene J., to Warner-Lambert Company. Pharmaceutical delivery bottle. 255,492, 6-17-80, Cl. D24-56.000.
Mendoza, Alfred P. Clock dial. 255,435, 6-17-80, Cl. D10-125.000.
Mettoy Company Limited, The: *See—*
Boot, Robin P., 255,475, Cl. D21-166.000.
Montagno, William J.: *See—*
Herbst, Norman R.; Salzman, Ronald N.; Hutchings, William F.; and Montagno, William J., 255,451, Cl. D15-138.000.
Moore, Billy R. Water closet base. 255,481, 6-17-80, Cl. D23-69.000.
Motley Manufacturing Agencies Pty. Ltd.: *See—*
Loechel, Stephen J., 255,471, Cl. D21-108.000.
Nicol, William A. Seed dispenser. 255,416, 6-17-80, Cl. D8-2.000.
Noyes, Eliot F.: *See—*
Bevilacqua, Ernest M.; Hawthorne, Allen D.; and Noyes, Eliot F., 255,456, Cl. D16-30.000.
Oda, Hiroshi: *See—*
Yoshida, Noboru; Oda, Hiroshi; and Hosokawa, Takeshi, 255,443, Cl. D13-11.000.
Omnimedical: *See—*
Weidinger, Joseph A., 255,494, Cl. D24-64.000.
Outdoor Sports Industries, Inc.: *See—*
Chambers, James R., 255,478, Cl. D22-7.000.
Owens-Illinois, Inc.: *See—*
Kretz, Edward J., 255,428, Cl. D9-284.000.
Plummer, James E., 255,429, Cl. D9-285.000.
Strand, Gordon A., 255,430, Cl. D9-285.000.
Packaging Systems Corporation: *See—*
Hovsepian, Charles J., 255,421, Cl. D9-171.000.
Para Band, Ltd.: *See—*
Button, Dennis K., 255,397, Cl. D2-380.000.
Pastrick, Danny L., to Zimmer USA, Inc. Talar surface gage. 255,490, 6-17-80, Cl. D24-26.000.
Peavey, Hartley D.: *See—*
Todd, Charles H., III, 255,460, Cl. D17-20.000.
Todd, Charles H., III, 255,461, Cl. D17-20.000.
Todd, Charles H., III, 255,462, Cl. D17-20.000.
Petruzzi, Thomas G.; Ashton, Harold P.; and Conti, Rino, to Dart Industries Inc. Planter or the like. 255,410, 6-17-80, Cl. D6-182.000.
Pharmacaps, Inc.: *See—*
Borkan, Florence, 255,427, Cl. D9-261.000.
Photomatrix Corporation: *See—*
Gensike, Karl H.; and Davis, John E., 255,455, Cl. D16-14.000.
Piotrowski, Tadeusz W., to Cincinnati Milacron Inc. Toolchanger arm. 255,452, 6-17-80, Cl. D15-140.000.
Piotrowski, Tadeusz W., to Cincinnati Milacron Inc. Toolchanger arm. 255,453, 6-17-80, Cl. D15-140.000.
Plummer, James E., to Owens-Illinois, Inc. Stopper. 255,429, 6-17-80, Cl. D9-285.000.
Podjan, Walter H. Collapsible hanging basket. 255,404, 6-17-80, Cl. D6-113.000.
Polaroid Corporation: *See—*
Conner, James M.; and Van Allen, David E., 255,457, Cl. D16-42.000.
Conner, James M., 255,458, Cl. D16-42.000.
Purex Corporation, Ltd.: *See—*
Zieg, Steven A., 255,480, Cl. D23-4.000.
Quaker Oats Company, The: *See—*
Crawford, Ralph W., 255,467, Cl. D21-59.000.
Ragone, Bernardo P.: *See—*
Brancaccio, Thomas J.; and Ragone, Bernardo P., 255,491, Cl. D24-37.000.
Ricca, Frank: *See—*
Ricca, Robert; Ricca, Frank; and Dupzyk, James R., 255,468, Cl. D21-72.000.
Ricca, Robert; Ricca, Frank; and Dupzyk, James R., to Frantic Feet Toy, Company. Simulative stilt. 255,468, 6-17-80, Cl. D21-72.000.
Robert, Tony. Aquarium or similar article. 255,500, 6-17-80, Cl. D30-8.000.
Rosen, Marc A., to Eli Lilly and Company. Bottle. 255,420, 6-17-80, Cl. D9-10.000.
Rutter, Sheldon M., to Scott & Fetzer Company, Quikut Division, The. Flatware handle. 255,415, 6-17-80, Cl. D7-152.000.
Ryobi Ltd.: *See—*
Sakamoto, Masakazu; and Doi, Tetsuyuki, 255,417, Cl. D8-62.000.
Sakamoto, Masakazu; and Doi, Tetsuyuki, to Ryobi Ltd. Portable electric grinder. 255,417, 6-17-80, Cl. D8-62.000.
Salzman, Ronald N.: *See—*
Herbst, Norman R.; Salzman, Ronald N.; Hutchings, William F.; and Montagno, William J., 255,451, Cl. D15-138.000.
San-I-Tech of St. Louis, Inc.: *See—*
Dye, Bill H.; and Feth, Karl G., 255,479, Cl. D23-2.000.
Satten, Michael I., to CBS Inc. Toy ramp. 255,474, 6-17-80, Cl. D21-109.000.
Scheinhaus, Myron G.; and Jacobson, Paul R., to Shine House, Inc. Combined strapping and insole for sandals. 255,396, 6-17-80, Cl. D2-326.000.
Schick Incorporated: *See—*
Benty, John L., 255,499, Cl. D28-35.000.
Scott & Fetzer Company, Quikut Division, The: *See—*
Rutter, Sheldon M., 255,415, Cl. D7-152.000.
Sheluga, Thomas G. Painter's guard. 255,418, 6-17-80, Cl. D8-14.000.
Shine House, Inc.: *See—*
Scheinhaus, Myron G.; and Jacobson, Paul R., 255,396, Cl. D2-326.000.
Smith, Cora L. Jewelry box. 255,401, 6-17-80, Cl. D3-75.000.
Spaits, Joseph T.: *See—*
Barclay, Rod; Cunningham, John A.; Mead, Alan B.; and Spaits, Joseph T., 255,464, Cl. D21-13.000.
Stahel, Alwin J., II, to Ball Corporation. Bud vase. 255,438, 6-17-80, Cl. D11-146.000.
Stephens, E. W. Corner gun cabinet. 255,406, 6-17-80, Cl. D6-145.000.
Strand, Bjorn: *See—*
Carlmark, Rolf, 255,503, Cl. D30-35.000.
Strand, Gordon A., to Owens-Illinois, Inc. Stopper. 255,430, 6-17-80, Cl. D9-285.000.
Sugibayashi, Sueo. Karate boxing glove. 255,393, 6-17-80, Cl. D2-231.000.
Sundstrom, Tommy; and Berg, Soren. Single family house. 255,495, 6-17-80, Cl. D25-17.000.
Swett, James B.; Bateman, Robert F.; and Fritz, Ann K., to Dart Industries Inc. Protective sheet for house plant husbandry. 255,411, 6-17-80, Cl. D6-269.000.
Talesfore, Nick, to Fairchild Camera and Instrument Corp. Digital clock. 255,432, 6-17-80, Cl. D10-15.000.
Teme, Karl: *See—*
Walther, Carl K.; Walther, Henning D.; Hageluken, Hubert P.; and Teme, Karl, 255,450, Cl. D15-124.000.
Terry, William R., to Williamson, William H. Belt. 255,398, 6-17-80, Cl. D2-393.000.
Todd, Charles H., III, to Peavey, Hartley D. Guitar head. 255,460, 6-17-80, Cl. D17-20.000.
Todd, Charles H., III, to Peavey, Hartley D. Guitar head. 255,461, 6-17-80, Cl. D17-20.000.
Todd, Charles H., III, to Peavey, Hartley D. Guitar head. 255,462, 6-17-80, Cl. D17-20.000.
Tomy Kogyo Co., Inc.: *See—*
Itakura, Hitoshi, 255,465, Cl. D21-27.000.
Tonini, Aldo. Adjustable towel bar. 255,403, 6-17-80, Cl. D6-99.000.
Trautner, Wagn. Solar energy collecting device. 255,482, 6-17-80, Cl. D23-72.000.
Treworgy, Dean T. Sculpture. 255,440, 6-17-80, Cl. D11-157.000.
Union Carbide Corporation: *See—*
Kaufman, George; and DuBois, Willsey W., 255,426, Cl. D9-258.000.
Valley Environments: *See—*
Bender, Alvin A., 255,486, Cl. D23-150.000.
Van Allen, David E.: *See—*
Conner, James M.; and Van Allen, David E., 255,457, Cl. D16-42.000.
Van Dyke, Jacob: *See—*
Chase, Richard A.; Van Dyke, Jacob; and Duy, Franz, 255,473, Cl. D21-108.000.
van Leggelo, Alphonse E. Floor structure for amusement device or the like. 255,496, 6-17-80, Cl. D25-80.000.
Vitamaster Industries, Inc.: *See—*
Brancaccio, Thomas J.; and Ragone, Bernardo P., 255,491, Cl. D24-37.000.
Volkmann, Henry W.; and Volkmann, Walter H. Flower pot holder. 255,409, 6-17-80, Cl. D6-182.000.
Volkmann, Walter H.: *See—*
Volkmann, Henry W.; and Volkmann, Walter H., 255,409, Cl. D6-182.000.
Walther, Carl K.; Walther, Henning D.; Hageluken, Hubert P.; and Teme, Karl, to Carl Kurt Walther GmbH & Co. KG. Housing for vibration-abrasive surface finishing machines. 255,450, 6-17-80, Cl. D15-124.000.
Walther, Henning D.: *See—*
Walther, Carl K.; Walther, Henning D.; Hageluken, Hubert P.; and Teme, Karl, 255,450, Cl. D15-124.000.
Warner-Lambert Company: *See—*
Meierhoefer, Eugene J., 255,492, Cl. D24-56.000.
Weidinger, Joseph A., to Omnimedical. Inflatable head restraint device. 255,494, 6-17-80, Cl. D24-64.000.
Westlund, Gerald D. Automatic sealing machine. 255,454, 6-17-80, Cl. D15-146.000.
Whalen Nesbitt Forde Ltd.: *See—*
Whalen, Robert T., 255,408, Cl. D6-181.000.
Whalen, Robert T., to Whalen Nesbitt Forde Ltd. Desk. 255,408, 6-17-80, Cl. D6-181.000.
Williamson, William H.: *See—*
Terry, William R., 255,398, Cl. D2-393.000.
Yoshida, Noboru; Oda, Hiroshi; and Hosokawa, Takeshi, to Matsushita Electric Industrial Co., Ltd. Surge absorber. 255,443, 6-17-80, Cl. D13-11.000.
Zieg, Steven A., to Purex Corporation, Ltd. Pump basket strainer. 255,480, 6-17-80, Cl. D23-4.000.
Zimmer USA, Inc.: *See—*
Pastrick, Danny L., 255,490, Cl. D24-26.000.

CLASSIFICATION OF PATENTS

ISSUED JUNE 17, 1980

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 3

1.911 4,207,627

CLASS 4

252 R 4,207,630
286 4,207,631
288 4,207,632
445 4,207,628
540 4,207,629

CLASS 5

90 4,207,633
255 4,207,634
437 4,207,635
481 4,207,636

CLASS 6

1 4,207,637

CLASS 8

94.23 4,208,184
150 4,207,638
409 4,208,183
471 4,208,182

CLASS 9

8 P 4,207,639

CLASS 15

29 4,207,640
41 R 4,207,641
53 AB 4,207,642
97 B 4,207,643
210 B 4,207,645
210 R 4,207,644
224 4,207,646
302 4,207,647
316 R 4,207,648
319 4,207,649
404 4,207,650

CLASS 16

41 4,207,651
130 4,207,652

CLASS 17

11 4,207,653
32 4,207,654

CLASS 23

230 B 4,208,185
4,208,187
230 R 4,208,186

CLASS 24

221 R 4,207,655

CLASS 29

25.14 4,207,656
33 T 4,207,657
117 4,208,147
149.5 B 4,207,659
149.5 PM 4,207,658
156.4 WL 4,207,660
157 R 4,207,661
157.3 C 4,207,662
263 4,207,663
264 4,207,664
270 4,207,665
402.08 4,207,666
417 4,207,667
434 4,207,668
564.5 4,207,669
576 C 4,207,670
592 R 4,207,671
611 4,207,672

CLASS 30

142 4,207,673
169 4,207,674
296 R 4,207,675
419 4,207,676

CLASS 33

166 4,207,679
174 R 4,207,680
180 AT 4,207,681

CLASS 34

57 A 4,207,682
60 4,207,683
93 4,207,684
107 4,207,685
133 4,207,686

CLASS 35

12 N 4,207,688
12 R 4,207,687
20 4,207,689

CLASS 37

58 4,207,690
124 4,207,691
129 4,207,692
195 4,207,693

CLASS 40

152.1 4,207,694
334 4,207,695
473 4,207,696
600 4,207,697

CLASS 42

90 4,207,698
94 4,207,699

CLASS 43

12 4,207,700

CLASS 44

10 R 4,208,188
42 4,208,189
53 4,208,190

CLASS 46

61 4,207,701
74 D 4,207,702
177 4,207,703
232 4,207,704

CLASS 47

48.5 4,207,705

CLASS 48

210 4,208,191

CLASS 49

141 4,207,706
501 4,207,707

CLASS 51

67 4,207,708
100 R 4,207,709
237 CS 4,207,710
432 4,207,711
434 4,207,712

CLASS 52

9 4,207,713
79.9 4,207,714
81 4,207,715
224 4,207,716
235 4,207,717
585 4,207,718
693 4,207,719

CLASS 53

151 4,207,720
248 4,207,721
4,207,722
281 4,207,723
403 4,207,724
471 4,207,725

CLASS 55

5 4,208,192
36 4,208,193
158 4,208,194
159 4,208,195
174 4,208,196
315 4,208,197

CLASS 56

13.9 4,207,726
330 4,207,727

CLASS 57

58.89 4,207,728
296 4,207,729
351 4,207,730

CLASS 60

39.34 4,207,736
276 4,207,737
278 4,207,738
398 4,207,739
486 4,207,740
496 4,207,741
602 4,207,742
611 4,207,743

CLASS 62

2 4,207,744
21 4,208,198
29 4,208,199
55 4,207,745
55.5 4,207,746
82 4,207,747
115 4,207,748
4,207,749
138 4,207,750
141 4,207,751
238 4,207,752
285 4,207,753
402 4,207,754

CLASS 64

12 4,207,758
15 B 4,207,755
17 R 4,207,757
23 4,207,756

CLASS 65

11 W 4,208,200
27 4,208,201

CLASS 68

15 4,207,759
18 FA 4,207,760

CLASS 71

88 4,208,202
95 4,208,203
97 4,208,204
118 4,208,205

CLASS 72

354 4,207,761
360 4,207,762
454 4,207,763

CLASS 73

147 4,207,764
151 4,207,765
301 4,207,766
363 4,207,767
431 4,207,768
517 A 4,207,769
517 R 4,207,770
587 4,207,771
620 4,207,772

CLASS 74

25 4,207,773
42 4,207,774
55 4,207,775
235 4,207,776
462 4,207,777
572 4,207,778
579 R 4,207,779
710.5 4,207,780

CLASS 75

60 4,208,206
130 R 4,208,207
170 4,208,208
232 4,208,209

CLASS 81

3.46 R 4,207,781
9.51 4,207,782
52.5 4,207,783
54 4,207,784

CLASS 82

2 R 4,207,785
4 C 4,207,786

CLASS 83

23 4,207,787
89 4,207,788
697 4,207,789
698 4,207,790

CLASS 84

1.01 4,207,791
4,207,792
1.24 4,207,793

CLASS 85

7 4,207,794

CLASS 89

1.813 4,207,795
28 R 4,207,796
34 4,207,797
191 R 4,207,798
196 4,207,799

CLASS 91

26 4,207,800
278 4,207,801
405 4,207,802
410 4,207,803
499 4,207,804
508 4,207,805

CLASS 92

31 4,207,806
128 4,207,807
158 4,207,808

CLASS 99

279 4,207,809
373 4,207,810

CLASS 100

121 4,207,811

CLASS 101

4 4,207,812
4,207,813
76 4,207,814
248 4,207,815
291 4,207,816
348 4,207,817
4,207,818

CLASS 102

18 MS 4,207,819
214 4,207,841

CLASS 104

2 4,207,820
119 4,207,821

CLASS 105

253 4,207,822

CLASS 106

2 4,208,212
10 4,208,213
56 4,208,214
73.3 4,208,215
74 4,208,216
97 4,208,217
287.25 4,208,218

CLASS 111

85 4,207,823

CLASS 112

49 4,207,824
79 R 4,207,825
184 4,207,826

CLASS 114

74 A 4,207,827
125 4,207,828
245 4,207,829
274 4,207,830

CLASS 118

63 4,207,831
212 4,207,832
324 4,207,833
620 4,207,834
664 4,207,835
4,207,836

CLASS 119

14.03 4,207,837
51 CF 4,207,838
51 R 4,207,839

CLASS 122

31 R 4,207,840
406 S 4,207,842

CLASS 123

30 D 4,207,843
32 B 4,207,844
102 4,207,845
117 D 4,207,846
117 R 4,207,847
122 D 4,207,848
139 AW 4,207,849
146.5 B 4,207,850
148 DS 4,207,851
148 E 4,207,852
179 B 4,207,853
188 M 4,207,854
198 F 4,207,855
4,207,856

CLASS 124

23 R 4,207,858
24 R 4,207,859
56 4,207,857

CLASS 126

77 4,207,860
83 4,207,861
137 4,207,862
198 4,207,863
285 R 4,207,864
420 4,207,866
431 4,207,865
447 4,207,867
449 4,207,868
450 4,207,869

CLASS 128

4 4,207,872
6 4,207,873
4,207,874
24 R 4,207,875
4,207,876
66 4,207,877
67 4,207,878
70 4,207,879
81 R 4,207,880
89 A 4,207,881
156 4,207,885
200.24 4,207,884
201.22 4,207,883
203.29 4,207,888
206.15 4,207,882
207.28 4,207,887
213 R 4,207,889
214 R 4,207,871
223 4,207,890
235 4,207,891
260 4,207,893
276 4,207,894
287 4,207,895
303.1 4,207,896
4,207,897
305 4,207,898
349 B 4,207,899
4,207,900
660 4,207,901
665 4,207,892
766 4,207,870
778 4,207,902
785 4,207,903
798 4,207,904

CLASS 131

17 R 4,207,905
21 D 4,207,906
84 B 4,207,907

CLASS 132

9 Re.30,305
88.5 4,207,909

CLASS 134

7 4,208,220
19 4,208,221
57 R 4,208,219

CLASS 137

14 4,207,910
39 4,207,912
68 R 4,207,913
85 4,207,914
117 4,207,915
119 4,207,911
171 4,207,916
269 4,207,917
375 4,207,918
487.5 4,207,919
615 4,207,920
616 4,207,921
625.11 4,207,922
625.47 4,207,923
625.66 4,207,924

CLASS 138

44 4,207,925

CLASS 139

196.3 4,207,926

CLASS 140

102 4,207,927
115 4,207,928

CLASS 141

1 4,207,929
4,207,930
4,207,931
90 4,207,932
106 4,207,933
383 4,207,934

CLASS 144

1 R 4,207,935
320 R 4,207,936

CLASS 148

6 4,208,222
6.2 4,208,223
16.5 4,208,224
101 4,208,225

CLASS 149

37 4,208,226

CLASS 150

1 4,207,937
1.5 R 4,208,227

CLASS 151

21 B 4,207,938

CLASS 152

221 4,207,939
362 R 4,207,940

CLASS 156

84 4,208,228
94 4,208,229
184 4,208,230
247 4,208,231
276 4,208,232
345 4,208,233
351 4,208,234
353 4,208,235
356 4,208,236
446 4,208,237
510 4,208,238
575 4,208,239
627 4,208,240
643 4,208,241
659.1 4,208,242

CLASS 159

6 W 4,208,243

CLASS 162

3 4,208,244
31 4,208,245
106 4,208,246

CLASS 164

82 4,207,941

CLASS 165

1 4,207,942
4,207,943
82 4,207,944

CLASS 166

272 4,207,945
274 4,207,946

CLASS 168

29 4,207,947

CLASS 172

59 4,207,948
68 4,207,949
126 4,207,950
225 4,207,951
754 4,207,952

CLASS 174

113 C 4,208,542
152 R 4,208,543

CLASS 175

209 4,207,953
330 4,207,954

CLASS 176

19 R 4,208,247
78 4,208,248
4,208,249

CLASS 177

25 4,207,955

CLASS 178

22 4,208,544
4,208,545

CLASS 179

1 GD 4,208,547
1 GP 4,208,546
1 VL 4,208,548
63 R 4,208,549
98 4,208,551
175.2 D 4,208,552
175.3 A 4,208,553

CLASS 180

24 4,207,956
70 P 4,207,957
167 4,207,959
228 4,207,960
271 4,207,958

CLASS 181

106 4,207,961
119 4,207,962
147 4,207,963
229 Re.30,306
284 4,207,964

CLASS 182

13 4,207,965
172 4,207,886
181 4,207,966

CLASS 187

9 E 4,207,967

CLASS 188

71.4 4,207,968
71.6 4,207,969
71.9 4,207,970
218 A 4,207,971

CLASS 192

111 A 4,207,972

CLASS 194

4 F 4,207,973

CLASS 198

344 4,207,974

CLASS 200

19 DR 4,208,554
52 R 4,208,555
148 E 4,208,556
153 R 4,208,557
296 4,208,558
329 4,208,559

CLASS 201

10 4,208,250
14 4,208,251

CLASS 202

105 4,208,252

CLASS 204

1 T 4,208,253
43 T 4,208,254
72 4,208,255
129.2 4,208,256
129.65 4,208,257
130 4,208,258
180 R 4,208,259
4,208,260
181 C 4,208,261
181 T 4,208,262
188 4,208,263
195 C 4,208,264
195 S 4,208,265
4,208,266

CLASS 206

77.1 4,207,975
246 4,207,976
361 4,207,977
443 4,207,978
456 4,207,979
4,207,980
457 4,207,981
534 4,207,982
554 4,207,983
4,207,984

CLASS 208

22 4,208,267
46 4,208,268
120 4,208,269
255 4,208,271

CLASS 209

3.3 4,208,272
4,208,273
44.2 4,208,274
167 4,208,275
168 4,208,276
211 4,208,270
223 A 4,208,277
223 R 4,208,278
564 4,207,985
616 4,207,986
691 4,207,987

CLASS 210

12 4,208,279
22 R 4,208,280
36 4,208,281
44 4,208,282
50 4,208,283
65 4,208,284
180 4,208,285
187 4,208,286
242 S 4,208,287
277 4,208,288
321 R 4,208,289
460 4,208,290
522 4,208,291

CLASS 215

232 4,207,988

CLASS 219

10.49 R 4,208,560
10.55 E 4,208,561
10.55 M Re.30,310
10.55 R 4,208,562
73 4,208,563
73.1 4,208,564
78.15 4,208,565
86.1 4,208,566
4,208,567
86.31 4,208,568
97 4,208,569
208 4,208,570
227 4,208,571
400 4,208,572
411 4,208,573
539 4,208,574

CLASS 220

266 4,207,989
267 4,207,990
269 4,207,991

CLASS 221

15 4,207,992
256 4,207,993

CLASS 222

146 R 4,207,994
231 4,207,995
507 4,207,996

CLASS 224

55 4,207,997
185 4,208,028

CLASS 226

95 4,207,998
150 4,207,999
171 4,208,000

CLASS 228

1 R 4,208,001
37 4,208,002
169 4,208,003
173 D 4,208,004
175 4,208,005

CLASS 229

2.5 R 4,208,006
31 R 4,208,007

CLASS 235

380 4,208,575
452 4,208,576
475 4,208,009

CLASS 236

49 4,208,010

CLASS 238

281 4,208,011

CLASS 239

57 4,208,012
351 4,208,013
533.4 4,208,014

CLASS 241

16 4,208,015

CLASS 242

18 G 4,208,016
47.01 4,208,017
55.19 R 4,208,018
56 A 4,208,019
84.2 G 4,208,020
86.5 R 4,208,021
86.52 4,208,022
198 4,208,023

CLASS 244

3.15 4,208,024
12.2 4,208,025
126 4,208,027
224 4,208,026

CLASS 249

183 4,208,029
217 4,208,030

CLASS 250

213 VT 4,208,577
214 AG 4,208,578
227 4,208,579
262 4,208,580
277 R 4,208,581
291 4,208,582
302 4,208,583
402 4,208,584
423 P 4,208,585
447 4,208,586
492 R 4,208,587
496 4,208,588
560 4,208,589

CLASS 251

61.2 4,208,031
69 4,208,032
90 4,208,033
149.1 4,208,034
196 4,208,035

CLASS 252

32.7 E 4,208,292
51.5 A 4,208,293
62.52 4,208,294
94 4,208,295
174.11 4,208,296
4,208,297
301.1 W 4,208,298
301.33 4,208,300
301.6 S 4,208,299
321 4,208,301
411 R 4,208,302
417 4,208,303
429 C 4,208,304
431 N 4,208,305
456 4,208,306
502 4,208,307
522 R 4,208,308

CLASS 254

150 R 4,208,036

CLASS 256

25 4,208,037
65 4,208,038

CLASS 260

8 4,208,309
23.5 A 4,208,310
29.2 M 4,208,312
29.2 TN 4,208,311
29.6 R 4,208,313
33.2 R 4,208,314
33.6 AQ 4,208,315
37 SB 4,208,316
38 4,208,317
40 P 4,208,318
42.39 4,208,319
45.75 K 4,208,321
4,208,322
45.8 NT 4,208,320
112 G 4,208,323
156 4,208,324
239 A 4,208,325
239 BF 4,208,326
239.3 R 4,208,327
326.31 4,208,330
340.9 R 4,208,331
4,208,332
345.5 4,208,333
4,208,334
346.22 4,208,335
4,208,336
4,208,337
347.8 4,208,338
396 R 4,208,339
4,208,340
438.1 4,208,341
465 E 4,208,343
502.4 R 4,208,344
507 R 4,208,345
510 4,208,346
555 A 4,208,347
556 A 4,208,348
570 R 4,208,349
978 4,208,357

CLASS 261

50 R 4,208,358
111 4,208,359
114 R 4,208,360
121 B 4,208,361

CLASS 264

1 4,208,362
4,208,363
4,208,364
4,208,365
24 4,208,366
43 4,208,367
45.5 4,208,368
46.5 4,208,369
117 4,208,370

CLASS 266

50 4,208,039
121 4,208,040
196 4,208,041
242 4,208,042
275 4,208,043

CLASS 267

48 4,208,044

CLASS 269

100 4,208,045

CLASS 271

122 4,208,046

CLASS 272

67 4,208,047
76 4,208,048
138 4,208,049

CLASS 273

1.5 A 4,208,050
26 C 4,208,051
113 4,208,052
199 R 4,208,053
258 4,208,054

CLASS 277

1 4,208,055
31 4,208,056
37 4,208,057
153 4,208,058
4,208,059
212 FB 4,208,060

CLASS 279

2 R 4,208,061

CLASS 280

434 4,208,062
445 4,208,063
502 4,208,064
507 4,208,065
713 Re.30,308

CLASS 282

11.5 A 4,208,066

CLASS 285

242 4,208,067

CLASS 290

1 R 4,208,590
40 R 4,208,591
52 4,208,592

CLASS 292

126 4,208,068

CLASS 293

102 4,208,069

CLASS 297

118 4,208,070
369 4,208,071
440 4,208,072

CLASS 301

5.3 4,208,073

CLASS 303

6 C 4,208,074

CLASS 307

35 4,208,593
200 A 4,208,594
297 4,208,595

CLASS 308

4 R 4,208,075
9 4,208,076
200 4,208,077
217 4,208,078

CLASS 310

13 4,208,596
59 4,208,597
64 4,208,598
4,208,599
178 4,208,600
231 4,208,601
335 4,208,602

CLASS 312

202 4,208,079

CLASS 313

1 4,208,603
113 4,208,604
221 4,208,605
274 4,208,606
279 4,208,608
315 4,208,609
332 4,208,607
414 4,208,610
487 4,208,611
495 4,208,612
4,208,613

CLASS 315

73 4,208,614
83 4,208,615
106 4,208,616
151 4,208,617
324 4,208,618

CLASS 318

4 4,208,619
111 4,208,620
138 4,208,621
257 4,208,622
696 4,208,623

CLASS 324

60 R 4,208,624
61 R 4,208,625
77 A 4,208,626
102 4,208,627
150 4,208,628
457 4,208,629

CLASS 328

117 4,208,632

CLASS 330

56 4,208,633
149 4,208,634

CLASS 331

17 4,208,635
94.5 C 4,208,637
94.5 G 4,208,638
94.5 P 4,208,636
116 FE 4,208,639

CLASS 333

18 4,208,640
217 4,208,641
246 4,208,642

CLASS 335

52 4,208,643

CLASS 337

102 4,208,644
297 4,208,645
372 4,208,646
404 4,208,647

CLASS 338

99 4,208,648

CLASS 339

18 B 4,208,080
31 R 4,208,081
45 M 4,208,082
97 P 4,208,083
98 4,208,084
103 C 4,208,085

CLASS 340

58 4,208,649
146.3 E 4,208,651
146.3 Y 4,208,652
151 4,208,653
351 4,208,654
627 4,208,655
635 4,208,656

CLASS 343

5 DP 4,208,657
7 VM 4,208,658
14 4,208,659
769 4,208,660
781 P 4,208,661
792 4,208,662
853 4,208,663

CLASS 346

15 4,208,664
33 WL 4,208,665
75 4,208,666

CLASS 350

3.85 4,208,086
16 4,208,087
31 4,208,088
46 4,208,089
61 4,208,090
96.13 4,208,091
96.20 4,208,093
4,208,094
96.21 4,208,092
4,208,095
96.25 4,208,096
97 4,208,097
134 4,208,098
175 ML 4,208,099
4,208,101
252 4,208,102
269 4,208,103
272 4,208,100
304 4,208,104
306 4,208,105
345 4,208,106

CLASS 351

7 4,208,107

CLASS 352

27 4,208,108

CLASS 353

15 4,208,109

CLASS 354

31 4,208,110
33 4,208,111
42 4,208,112
82 4,208,113
86 4,208,114
201 4,208,115
275 4,208,116
4,208,117
288 4,208,118
322 4,208,119
354 4,208,120

CLASS 355

10 4,208,121
14 R 4,208,122
25 4,208,123
32 4,208,124

CLASS 356

5 4,208,125
51 4,208,126
244 4,208,127
350 4,208,128
425 4,208,129
428 4,208,130

CLASS 357

16 4,208,667
24 4,208,668
38 4,208,669
45 4,208,670

CLASS 358

4 4,208,671
6 4,208,672
8 4,208,673
4,208,674
93 4,208,675
237 4,208,676
280 4,208,677

CLASS 360

71 4,208,678
77 4,208,679
78 4,208,680
97 4,208,681
99 4,208,682
4,208,683
104 4,208,684
107 4,208,685
137 4,208,686

CLASS 361

20 4,208,687
46 4,208,688
48 4,208,689
4,208,690
79 4,208,691
87 4,208,692
94 4,208,693
119 4,208,694
181 4,208,695
212 4,208,696
229 4,208,697
414 4,208,698
433 4,208,699

CLASS 362

10 4,208,700
202 4,208,701
217 4,208,702
287 4,208,703
297 4,208,704

CLASS 363

19 4,208,705
26 4,208,706
35 4,208,707
57 4,208,708
90 4,208,709
96 4,208,710
136 4,208,711

CLASS 364

105 4,208,712
200 4,208,713
4,208,714

CLASSIFICATION OF PATENTS

4,208,715
4,208,716
426 4,208,717
474 4,208,718
515 4,208,719
709 4,208,720
731 4,208,721
760 4,208,722
900 4,208,723
4,208,724

CLASS 365

87 4,208,725
104 4,208,726
105 4,208,727
154 4,208,728
184 4,208,729
203 4,208,730

CLASS 366

7 4,208,131
101 4,208,132
130 4,208,133
147 4,208,134
219 4,208,135
338 4,208,136

CLASS 367

11 4,208,731
42 4,208,732
125 4,208,733
134 4,208,734
136 4,208,735
153 4,208,736
171 4,208,737
173 4,208,738

CLASS 368

29 4,207,731
76 4,207,732
83 4,207,734
108 4,207,733
300 4,207,735

CLASS 370

113 4,208,550

CLASS 371

15 4,208,008
47 4,208,650

CLASS 375

2 4,208,739
7 4,208,630
30 4,208,740

CLASS 400

124 4,208,137
4,208,138
126 4,208,139
171 4,208,140
320 4,208,142
335 4,208,141

CLASS 401

98 4,208,143
192 4,208,144
196 4,208,145

CLASS 402

4 4,208,146

CLASS 403

251 4,208,148
267 4,208,149
338 4,208,150

CLASS 404

122 4,208,151

CLASS 405

186 4,208,152

CLASS 406

72 4,208,153

CLASS 408

204 4,208,154

CLASS 409

3 4,208,155
165 4,208,156
218 4,208,157

CLASS 410

37 Re.30,307

CLASS 414

22 4,208,158
225 4,208,159
347 4,208,160
401 4,208,161
686 4,208,162
723 4,208,163
748 4,208,164

CLASS 415

138 4,208,165
170 A 4,208,166
217 4,208,167

CLASS 416

132 B 4,208,168
185 4,208,169
221 4,208,170

CLASS 417

15 4,208,171
171 4,208,172

CLASS 422

61 4,208,371
65 4,208,372
129 4,208,373
179 4,208,374
225 4,208,375
261 4,208,376

CLASS 423

8 4,208,377
27 4,208,378
49 4,208,379
143 4,208,380
210 4,208,381
4,208,382
215.5 4,208,383
220 4,208,384
226 4,208,385
235 4,208,386
243 4,208,387
268 4,208,388
321 S 4,208,389
356 4,208,390
385 4,208,391
497 4,208,392
555 4,208,393
561 R 4,208,394
567 A 4,208,395
579 4,208,396
651 4,208,397

CLASS 424

1 4,208,398
4,208,399
4,208,400
52 Re.30,309
54 4,208,401
70 4,208,402
115 4,208,403
153 4,208,404
177 4,208,405
180 4,208,406
4,208,407
184 4,208,408
209 4,208,409
244 4,208,410
245 4,208,411
250 4,208,412
4,208,413
262 4,208,414
263 4,208,415
4,208,416
267 4,208,417
4,208,418
270 4,208,419
4,208,420
274 4,208,421
4,208,422
4,208,423
278 4,208,424
282 4,208,425
283 4,208,426
285 4,208,427
305 4,208,428
312 4,208,429
326 4,208,430

CLASS 425

78 4,208,174
131.1 4,208,175
139 4,208,176
404 4,208,177
467 4,208,178

CLASS 426

3 4,208,431
4 4,208,432
69 4,208,433
72 4,208,434
92 4,208,435
104 4,208,436
134 4,208,437
235 4,208,438
242 4,208,439
244 4,208,440
293 4,208,441
296 4,208,442
331 4,208,443
549 4,208,476
570 4,208,444
607 4,208,445

CLASS 427

48 4,208,447
67 4,208,448
101 4,208,449
126 4,208,451
126.3 4,208,450
204 4,208,452
237 4,208,453
238 4,208,454
296 4,208,173
341 4,208,455

CLASS 428

63 4,208,456
107 4,208,457
126 4,208,458
154 4,208,459
195 4,208,460
207 4,208,461
265 4,208,462
276 4,208,463
315 4,208,468
4,208,469
328 4,208,470
377 4,208,464
416 4,208,465
447 4,208,471
477 4,208,466
480 4,208,467
550 4,208,472

CLASS 429

112 4,208,473
191 4,208,474
193 4,208,475

CLASS 430

124 4,208,446
140 4,208,210
281 4,208,477
314 4,208,211
616 4,208,478

CLASS 431

284 4,208,180

CLASS 432

109 4,208,181
234 4,208,179

CLASS 433

60 4,207,677
203 4,207,678

CLASS 435

7 4,208,479
34 4,208,480
43 4,208,481
178 4,208,482
284 4,208,483
286 4,208,484

CLASS 455

92 4,208,631
180 4,208,741

CLASS 521

65 4,208,485
89 4,208,486
117 4,208,487

CLASS 525

3 4,208,496
89 4,208,356
107 4,208,488
146 4,208,489
243 4,208,490
254 4,208,491
389 4,208,492
420 4,208,493
440 4,208,494
4,208,495

CLASS 526

138 4,208,497
179 4,208,498
202 4,208,499
217 4,208,500
259 4,208,501
292 4,208,502

CLASS 528

14 4,208,503
15 4,208,504
30 4,208,505
32 4,208,506
64 4,208,507
175 4,208,508
207 4,208,509
272 4,208,511
279 4,208,527
487 4,208,528
501 4,208,529
4,208,530

CLASS 536

17 R 4,208,531

CLASS 542

426 4,208,512
459 4,208,513

CLASS 544

11 4,208,514
16 4,208,515
17 4,208,516
28 4,208,517
62 4,208,518
190 4,208,519
250 4,208,520
4,208,521
385 4,208,522

CLASS 546

97 4,208,523
144 4,208,524
184 4,208,525
209 4,208,526

CLASS 548

180 4,208,328
239 4,208,329
247 4,208,510
248 4,208,532

CLASS 556

436 4,208,342

CLASS 560

122 4,208,533
246 4,208,534

CLASS 562

430 4,208,535

CLASS 568

3 4,208,354
324 4,208,350
327 4,208,351
431 4,208,352
472 4,208,353
771 4,208,536
804 4,208,537
807 4,208,538
814 4,208,539

CLASS 585

362 4,208,355
809 4,208,540
860 4,208,541

CLASSIFICATION OF DESIGNS

D2— 229 255,392
231 255,393
255,394
247 255,395
326 255,396
380 255,397
393 255,398
D3— 11 255,399
30 255,400
75 255,401
D6— 79 255,402
99 255,403
113 255,404
132 255,405
145 255,406
172 255,407
181 255,408
182 255,409
255,410
269 255,411
D7— 43 255,412
96 255,413
141 255,414
152 255,415
D8— 2 255,416
14 255,418
62 255,417
382 255,419
D9— 10 255,420
171 255,421
245 255,422
253 255,423
255,424
255,425
258 255,426
261 255,427
284 255,428
285 255,429
D10— 2 255,430
15 255,431
255,432
255,433
69 255,434
125 255,435
D11— 38 255,436
133 255,437
146 255,438
152 255,439
157 255,440
255,441
D12— 187 255,442
D13— 11 255,443
D14— 6 255,444
53 255,445
68 255,446
82 255,447
84 255,448
86 255,449
D15— 124 255,450
138 255,451
140 255,452
255,453
146 255,454
D16— 14 255,455
30 255,456
42 255,457
255,458
D17— 13 255,459
20 255,460
255,461
255,462
22 255,463
D21— 13 255,464
27 255,465
52 255,466
59 255,467
72 255,468
88 255,469
96 255,470
108 255,471
255,472
255,473
109 255,474
166 255,475
169 255,476
218 255,477
D22— 7 255,478
D23— 2 255,479
4 255,480
69 255,481
138.1 255,483
255,484
150 255,485
255,486
154 255,487
155 255,488
255,489
D24— 26 255,490
37 255,491
56 255,492
64 255,493
255,494
D25— 17 255,495
80 255,496
D27— 03 255,497
09 255,498
D28— 35 255,499
D30— 8 255,500
27 255,501
255,502
35 255,503

CLASSIFICATION OF PLANTS

P.— 69 4,546
4,547
4,548
4,549
4,550
4,551

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

2 :	4,207,996		4,207,878		4,208,738		4,207,909		4,208,586		4,208,739
4 :	4,208,084		4,207,893	08 :	4,208,279		4,207,993		4,208,610		4,208,740
	4,208,237		4,207,896		4,208,447		4,208,434		4,208,631	25 :	4,207,651
	4,208,716		4,207,935		4,208,679		4,208,593		4,208,647		4,207,659
6 :	4,207,665		4,207,958		4,208,683	15 :	4,208,220		4,208,656		4,207,673
	4,207,674		4,207,981		4,208,684	16 :	Re.30,307		4,208,694		4,207,710
	4,207,703		4,207,988	09 :	4,207,721		4,207,683	18 :	4,207,694		4,207,785
	4,207,734		4,208,018		4,207,722		4,207,776		4,207,708		4,207,864
	4,207,764		4,208,050		4,207,758	17 :	4,207,684		4,207,711		4,207,894
	4,207,769		4,208,068		4,207,772		4,207,686		4,207,829		4,207,915
	4,207,774		4,208,071		4,207,873		4,207,691		4,207,929		4,207,926
	4,207,786		4,208,072		4,207,874		4,207,692		4,207,930		4,208,002
	4,207,795		4,208,073		4,207,883		4,207,792		4,207,931		4,208,060
	4,207,840		4,208,077		4,207,886		4,207,809		4,207,987		4,208,103
	4,207,865		4,208,089		4,208,092		4,207,817		4,208,351		4,208,112
	4,207,888		4,208,093		4,208,144		4,207,833		4,208,403		4,208,234
	4,207,951		4,208,098		4,208,176		4,207,854		4,208,414		4,208,242
	4,207,994		4,208,106		4,208,177		4,207,872		4,208,419		4,208,278
	4,208,027		4,208,128		4,208,192		4,207,875		4,208,515		4,208,376
	4,208,129		4,208,132		4,208,222		4,207,876		4,208,524		4,208,429
	4,208,680		4,208,135		4,208,431		4,207,880		4,208,554		4,208,529
8 :	4,207,685		4,208,136		4,208,439		4,207,895		4,208,615		4,208,562
	4,207,923		4,208,137		4,208,487		4,207,899	19 :	4,207,707		4,208,625
	4,208,629		4,208,141		4,208,565		4,207,900		4,207,823		4,208,632
9 :	4,207,746		4,208,204		4,208,580		4,207,967		4,207,950		4,208,651
	4,207,999		4,208,223		4,208,602		4,207,968		4,207,952		4,208,657
	4,208,091		4,208,230		4,208,623		4,207,979		4,208,652		4,208,711
	4,208,126		4,208,239		4,208,688		4,207,990		4,208,689		4,208,722
01 :	4,208,086		4,208,270	10 :	4,208,205		4,208,001		4,208,690		4,208,736
	4,208,551		4,208,272		4,208,321		4,208,022		4,208,693	26 :	Re.30,308
04 :	4,207,813		4,208,273		4,208,322		4,208,029	20 :	4,208,201		4,207,630
	4,208,038		4,208,289		4,208,329		4,208,066		4,208,203		4,207,660
	4,208,049		4,208,290		4,208,371		4,208,083		4,208,359		4,207,678
	4,208,065		4,208,348		4,208,442		4,208,090	21 :	4,207,634		4,207,717
	4,208,235		4,208,373	11 :	4,207,797		4,208,105		4,207,760		4,207,718
	4,208,595		4,208,386	12 :	4,207,650		4,208,124		4,208,055		4,207,719
	4,208,678		4,208,395		4,207,675		4,208,151		4,208,561		4,207,747
	4,208,681		4,208,396		4,207,688		4,208,157		4,208,703		4,207,780
05 :	4,208,227		4,208,423		4,207,741		4,208,162	22 :	4,207,765		4,207,799
06 :	Re.30,305		4,208,438		4,207,782		4,208,193		4,208,007		4,207,877
	4,207,632		4,208,458		4,207,810		4,208,236		4,208,269		4,207,972
	4,207,670		4,208,479		4,207,812		4,208,240	23 :	4,207,936		4,207,975
	4,207,672		4,208,548		4,207,851		4,208,327	24 :	4,207,796		4,208,061
	4,207,701		4,208,577		4,207,866		4,208,340		4,207,831		4,208,075
	4,207,723		4,208,582		4,207,891		4,208,377		4,207,841		4,208,190
	4,207,727		4,208,626		4,207,901		4,208,387		4,208,048		4,208,197
	4,207,753		4,208,630		4,207,921		4,208,397		4,208,152		4,208,226
	4,207,762		4,208,635		4,208,096		4,208,407		4,208,471		4,208,229
	4,207,783		4,208,642		4,208,107		4,208,476		4,208,544		4,208,258
	4,207,819		4,208,660		4,208,109		4,208,545		4,208,587		4,208,266
	4,207,827		4,208,682		4,208,245		4,208,549		4,208,721		4,208,293
	4,207,850		4,208,701		4,208,288		4,208,559		4,208,729		4,208,374
	4,207,871		4,208,719	13 :	4,207,787		4,208,563		4,208,737		4,208,388

4,208,409
4,208,427
4,208,454
4,208,463
4,208,465
4,208,473
4,208,503
4,208,512
4,208,514
4,208,538
4,208,568
27 : 4,207,679
4,207,705
4,207,800
4,207,802
4,207,837
4,207,868
4,207,903
4,207,919
4,207,976
4,207,983
4,208,008
4,208,012
4,208,024
4,208,194
4,208,294
4,208,335
4,208,336
4,208,337
4,208,379
4,208,398
4,208,440
4,208,441
4,208,443
4,208,457
4,208,572
4,208,621
4,208,696
4,208,725
28 : 4,208,556
29 : 4,207,725
4,207,822
4,207,913
4,208,375
4,208,452
4,208,482
4,208,510
30 : 4,207,637
31 : 4,208,070
4,208,251
32 : 4,208,121
4,208,275
4,208,378
4,208,643
34 : 4,207,655
4,207,666
4,207,667
4,207,668
4,207,695
4,207,706
4,207,771
4,207,826

4,207,857
4,207,870
4,207,905
4,207,974
4,208,009
4,208,019
4,208,094
4,208,186
4,208,191
4,208,209
4,208,211
4,208,224
4,208,263
4,208,292
4,208,296
4,208,297
4,208,301
4,208,308
4,208,310
4,208,330
4,208,331
4,208,332
4,208,333
4,208,334
4,208,363
4,208,364
4,208,382
4,208,385
4,208,401
4,208,408
4,208,422
4,208,430
4,208,448
4,208,466
4,208,474
4,208,481
4,208,491
4,208,496
4,208,501
4,208,502
4,208,511
4,208,518
4,208,519
4,208,532
4,208,535
4,208,539
4,208,553
4,208,606
4,208,614
4,208,624
4,208,627
4,208,712
4,208,728
4,208,730
36 : 4,207,628
4,207,677
4,207,687
4,207,696
4,207,748
4,207,749
4,207,766
4,207,770

4,207,778
4,207,793
4,207,814
4,207,839
4,207,902
4,207,918
4,207,959
4,207,962
4,207,963
4,207,973
4,207,984
4,208,006
4,208,076
4,208,116
4,208,117
4,208,140
4,208,142
4,208,149
4,208,200
4,208,206
4,208,238
4,208,267
4,208,341
4,208,346
4,208,358
4,208,362
4,208,369
4,208,394
4,208,425
4,208,478
4,208,480
4,208,492
4,208,506
4,208,521
4,208,522
4,208,523
4,208,575
4,208,579
4,208,588
4,208,599
4,208,600
4,208,636
4,208,667
4,208,698
4,208,734
4,208,741
37 : 4,207,858
4,207,861
4,207,885
4,208,010
4,208,081
4,208,314
4,208,485
39 : 4,207,647
4,207,649
4,207,653
4,207,680
4,207,697
4,207,699
4,207,724
4,207,755
4,207,781

4,207,794
4,207,818
4,207,832
4,207,860
4,207,884
4,207,889
4,207,898
4,207,938
4,207,939
4,208,033
4,208,148
4,208,164
4,208,166
4,208,170
4,208,175
4,208,221
4,208,307
4,208,328
4,208,357
4,208,444
4,208,450
4,208,456
4,208,470
4,208,483
4,208,516
4,208,528
4,208,534
4,208,550
4,208,567
4,208,603
4,208,605
4,208,608
4,208,609
4,208,645
4,208,662
4,208,666
4,208,702
40 : 4,207,947
4,208,020
4,208,063
4,208,196
4,208,198
4,208,302
4,208,304
4,208,352
4,208,435
41 : 4,207,698
4,208,350
42 : 4,207,636
4,207,643
4,207,682
4,207,715
4,207,733
4,207,773
4,207,811
4,207,890
4,207,944
4,207,977
4,207,995
4,208,000
4,208,021
4,208,026

4,208,028
4,208,044
4,208,188
4,208,214
4,208,215
4,208,217
4,208,232
4,208,241
4,208,247
4,208,287
4,208,313
4,208,343
4,208,355
4,208,365
4,208,366
4,208,399
4,208,413
4,208,415
4,208,416
4,208,446
4,208,453
4,208,459
4,208,461
4,208,475
4,208,494
4,208,495
4,208,520
4,208,543
4,208,591
4,208,594
4,208,597
4,208,639
4,208,655
4,208,676
4,208,687
4,208,717
43 : 4,208,291
44 : 4,207,997
4,208,085
45 : 4,207,663
4,208,016
4,208,173
4,208,699
46 : 4,207,933
47 : 4,207,648
4,208,467
4,208,638
48 : 4,207,658
4,207,693
4,207,756
4,207,855
4,207,924
4,207,925
4,207,945
4,207,946
4,207,969
4,207,985
4,207,992
4,208,013
4,208,035
4,208,051

4,208,054
4,208,056
4,208,057
4,208,087
4,208,143
4,208,158
4,208,218
4,208,280
4,208,285
4,208,306
4,208,315
4,208,384
4,208,392
4,208,424
4,208,433
4,208,469
4,208,486
4,208,541
4,208,650
4,208,665
4,208,720
4,208,726
4,208,727
4,208,732
49 : 4,207,867
4,207,943
4,208,104
4,208,123
4,208,405
4,208,724
51 : 4,207,646
4,208,079
4,208,172
4,208,248
4,208,249
53 : 4,207,633
4,207,702
4,207,761
4,207,862
4,207,879
4,207,882
4,207,904
4,208,030
4,208,062
4,208,153
4,208,590
54 : 4,208,004
4,208,618
55 : Re.30,306
4,207,664
4,207,681
4,207,714
4,207,914
4,207,978
4,208,161
4,208,181
4,208,620
4,208,718
56 : 4,207,881
4,208,047
4,208,097

DESIGN PATENTS

6 : 255,431
255,432
01 : 255,459
06 : 255,394
255,395
255,396
255,402
255,423
255,424
255,425
255,434
255,435
255,442
255,455
255,463
255,468
255,480

255,486
255,488
255,489
255,494
08 : 255,397
255,478
255,487
255,501
255,502
09 : 255,400
255,416
255,433
255,456
255,469
11 : 255,482
12 : 255,410

255,411
255,415
17 : 255,398
255,412
255,413
255,449
255,483
255,484
255,498
18 : 255,490
20 : 255,470
255,481
22 : 255,476
24 : 255,445
255,473
26 : 255,404

255,466
27 : 255,422
255,438
255,454
28 : 255,460
255,461
255,462
29 : 255,479
34 : 255,399
255,418
255,421
255,426
255,427
255,492
255,497
36 : 255,392

255,414
255,420
255,436
255,440
255,444
255,448
255,451
255,457
255,458
255,467
255,474
255,491
255,499
39 : 255,428
255,429
255,430

255,452
255,453
41 : 255,401
255,472
42 : 255,406
255,407
255,477
44 : 255,439
47 : 255,437
255,441
48 : 255,409
255,464
255,500
50 : 255,493
51 : 255,485
53 : 255,419

U.S. GOVERNMENT PRINTING OFFICE : O—1980

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

DESIGN PATENTS

CHANGE OF ADDRESS FORM

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

SUBSCRIPTION ORDER FORM

SUBSCRIPTION ORDER FORM

ENTER MY SUBSCRIPTION TO:

@ $ Domestic; @ $ Foreign.

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No. .....

MAIL ORDER FORM TO:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

Mail this form to: NEW ADDRESS

PLEASE PRINT OR TYPE

NAME—1ST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY

STATE

ZIP CODE

For COUNTRY

CHANGE OF ADDRESS FORM

NAME—1ST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY

STATE

ZIP CODE

For COUNTRY

PLEASE PRINT OR TYPE

SUBSCRIPTION ORDER FORM

ENTER MY SUBSCRIPTION TO:

Domestic @ $

Foreign

NAME—1ST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY

STATE

ZIP CODE

For COUNTRY

PLEASE PRINT OR TYPE

Make checks payable to Superintendent of Documents Government Printing Office Washington, D.C. 20402

☐ Change in Domestic Postage Rates

☐ Change in Foreign Postage Rates

U.S. DEPARTMENT OF COMMERCE
Philip M. Klutznick, *Secretary*

PATENT AND TRADEMARK OFFICE
Sidney A. Diamond, *Commissioner*